

Revision of the genus *Indomias* Marshall (Coleoptera, Curculionidae, Entiminae, Tanymecini) from India

V.V. RAMAMURTHY¹ & SHALOO AYRI²

Division of Entomology, Indian Agricultural Research Institute, New Delhi 110 012, India.

E-mail: ¹vvr3@vsnl.com; ²shalooayri@gmail.com

Table of contents

Abstract	2
Introduction	2
Materials and methods	3
Taxonomic studies	4
Genus <i>Indomias</i> Marshall	4
Key to the species of <i>Indomias</i>	5
Description of species	7
1. <i>Indomias acutipennis</i> (Boheman)	7
2. <i>Indomias ajaykumari</i> Ramamurthy sp. nov.	8
3. <i>Indomias albizziae</i> Ramamurthy sp. nov.	9
4. <i>Indomias anamalainus</i> (Marshall)	10
5. <i>Indomias beelsoni</i> (Marshall)	11
6. <i>Indomias cretaceus</i> (Faust)	29
7. <i>Indomias decipiens</i> (Marshall)	30
8. <i>Indomias dubeyi</i> Ramamurthy sp. nov.	31
9. <i>Indomias frater</i> (Marshall)	32
10. <i>Indomias hispidus</i> (Marshall)	33
11. <i>Indomias kriparami</i> Ramamurthy sp. nov.	34
12. <i>Indomias lividus</i> (Marshall)	35
13. <i>Indomias maicykuttyae</i> Ramamurthy sp. nov.	36
14. <i>Indomias mangalai</i> Ramamurthy sp. nov.	36
15. <i>Indomias marshalli</i> Ramamurthy sp. nov.	37
16. <i>Indomias mayarami</i> Ramamurthy sp. nov.	38
17. <i>Indomias menoni</i> Ramamurthy sp. nov.	39
18. <i>Indomias perroteti</i> (Boheman)	40
19. <i>Indomias praeteritus</i> (Marshall)	40
20. <i>Indomias prasinus</i> (Boheman)	41
21. <i>Indomias premlali</i> Ramamurthy sp. nov.	42
22. <i>Indomias rajendrani</i> Ramamurthy sp. nov.	43
23. <i>Indomias ramakrishnani</i> Ramamurthy sp. nov.	44
24. <i>Indomias sharanagoudai</i> Ramamurthy sp. nov.	44
25. <i>Indomias yercaudensis</i> Ramamurthy sp. nov.	45
26. <i>Sympiezomias subserratipes</i> Ramamurthy sp. nov.	46
References	47
Appendix 1. Annotated checklist of <i>Indomias</i> , <i>Burmotragus</i> and <i>Sympiezomias</i>	48

Abstract

Twenty-five species of the genus *Indomias* Marshall (1941) (Curculionidae, Entiminae) known from India are revised. Their taxonomic characters and economic importance are discussed. The previously known species of *Indomias* are redescribed, while fourteen new species are also described: *I. ajaykumari* sp. nov., *I. albizziae* sp. nov., *I. dubeyi* sp. nov., *I. kriparami* sp. nov., *I. maicykuttyae* sp. nov., *I. mangalai* sp. nov., *I. marshalli* sp. nov., *I. mayarami* sp. nov., *I. menoni* sp. nov., *I. premlali* sp. nov., *I. rajendrani* sp. nov., *I. ramakrishnani* sp. nov., *I. sharanagoudai* sp. nov., and *I. yercaudensis* sp. nov.. A new species of *Sympiezomias* (Faust, 1887) from India, *S. subserratipes* sp. nov., is also described. Annotated checklists of the species of *Indomias*, *Sympiezomias* and *Burmotragus* (Marshall, 1941) are given. A key to the species of *Indomias* is provided.

Key words: Curculionidae, Entiminae, Tanymecini, *Indomias*, *Sympiezomias*, *Burmotragus*, India, key

Introduction

The genus *Indomias* Marshall (1941) is endemic to India and Sri Lanka. Prior to this study, only 14 species were known. Some are pests and vectors of certain diseases of agricultural crops, forest trees and other economically important plants (Marshall, 1921; Ayyar, 1922; Atkinson, 1926; Hart and Rengaswamy, 1926; Anonymous, 1932, 1933; Wadhi and Batra, 1964; Singh, 1964). *Indomias* was originally described by Marshall (1941) based on species from the country formerly known as Burma. Marshall also clarified the synonymy of *Iphisomus* with *Sympiezomias*, and gave a comprehensive review of the species included. He proposed that the species included in *Sympiezomias* should be divided into three independent genera, namely *Indomias*, *Sympiezomias* and *Burmotragus*. *Indomias* is distinct from *Sympiezomias* and *Burmotragus* in many morphological, as well as, zoogeographic characters (Table 1). All three genera are distinct from other genera within Tanymecini as they possess a humeral callus or a swelling in the humeral region amounting to a humeral fold or false shoulder making them resemble some species of *Lepropus* in elytral form. In many species of *Indomias*, the shoulder is replaced by a simple swelling or humeral fold without any corresponding indentation on the lower surface of the elytra. In addition, many species also exhibit a small or very small basal lateral notch on the elytra, characteristic of weevils having functional wings. As the episternum is not fused with the metasternum, this suggests that the power of flight has been lost. Thus, *Indomias*, *Burmotragus* and *Sympiezomias* are characterized by non-functional hind wings and by the comparatively small size of the epimera of the mesosternum and relatively shorter metasternum. The wingless condition is most likely apomorphic and the variation in the humeral region of the elytra demonstrates the link with the plesiomorphic winged condition.

Neither Marshall (1941), nor any further study could clearly define *Indomias* as a genus in relation to closely allied genera, namely *Sympiezomias*, *Burmotragus*, *Geotragus*, *Tanymecus*, *Lepropus* and *Brachyaspistes*. Evidence obtained through genitalic studies was therefore also necessary. The species descriptions available needed additional illustrations and morphometrics of essential characters. This necessity became more apparent with the economic importance of many species. Hence, a revisionary study was undertaken on *Indomias* and results are presented herein.

Indomias is currently placed in the tribe Tanymecini of the subfamily Entiminae (Alonso-Zarazaga and Lyal, 1999). The analysis of *Indomias* with reference to its related genera revealed that there are distinct genitalic and morphological differences, such as: *Burmotragus* having the apex of the median lobe of aedeagus much broader and manubrium 0.7x as long as the median lobe (figs. 255, 256, 257), spiculum gastrale with basal prongs having a massive base and a more elongate apex (fig. 188), *Geotragus* with parameres of manubrium distinctly deflected (fig. 248), spermatheca with proximal and distal arms equal in length (fig. 148), spiculum ventrale with basal plate much longer than broad, sides straight and base with a pedicel (1.66:1) (fig. 157). In addition, the following characters will differentiate *Burmotragus* from *Indomias*: scutellum concealed, elytra without any humeral fold, the metasternal episternum distinct only in the basal half and fusing posteriorly with metasternum, mesosternal episternum much smaller than epimeron, venter with segment 2 separated from 1 by a curved suture. All these genera are similar to *Leptomias* as they

possess the wingless condition, in contrast to other Tanymecini known from the region, namely *Tanymecus* and *Lepropus*. *Leptomias* is distinguished by the rostrum lacking a longitudinal impression, submentum with a very short peduncle and mentum with four to six setae as described by Marshall (1916). In all the species of *Indomias* examined, the elytra are without projecting shoulders and their lateral edges are not emarginate near the base. In some species of *Indomias* there is a small angular projection close to base of elytra and this should not be construed as shoulders in the real sense. Such projections are nearly external processes as they are not accompanied by the corresponding indentation on the lower surface of elytra. In such species of *Indomias*, where there is a small angular projection, the projections are quite rudimentary and still denote the absence of functional wings. Marshall (1916) also observed these characters while he studied the Tanymecini from India and adjacent countries.

TABLE 1. Differentiation of *Indomias*, *Sympiezomias* and *Burmotragus*.

No.	Characters	<i>Indomias</i>	<i>Sympiezomias</i>	<i>Burmotragus</i>
1.	Morphological			
	i) Scutellum	Distinct	Concealed	Concealed*
	ii) Elytra	With a humeral fold	Without a humeral fold	Without a humeral fold
	iii) Hind tibiae	Not denticulate (fig. 134)	Denticulate internally on apical half (fig. 133)	Denticulate internally on apical half
	iv) Epistome	Quite undefined	Well defined	Well defined
	v) Antenna	Funicle with basal segments variable in length	Funicle with segment 1 normally longer than 2 (fig. 77)	Funicle with two basal segments equal
	vi) Mentum	With 2 setae	With 4-6 setae	With 2 setae
	vii) Intercoxal process	Narrower, arcuate or angulate (fig. 136)	Narrower, arcuate or angulate (fig. 135)	Broader and truncate
	viii) Suture between ventrite 1 and 2	Distinct throughout (fig. 136)	Distinct throughout (fig. 135)	More or less obliterated in middle
	ix) Morphometrics of ventrite 2/ ventrite 3+4	Much longer than 3+4 (fig. 136)	Much longer than 3+4 in the middle (fig. 135)	Not or only slightly longer than 3+4
2.	Zoogeographical	Peninsular India, Sri Lanka	Myanmar, China and Japan	Myanmar, India (N. Eastern region adjacent to Myanmar)

*In case of *B. similis* scutellum seems to be distinct and it is an exception.

The analysis of the species of *Indomias* described reveal that majority of its species were described between 1941 and 1988. Marshall (1916, 1921 and 1941) was the major contributor as indicated in the annotated checklist of the genus provided, along with *Sympiezomias* and *Burmotragus*, and appended herein.

Materials and methods

This revision of *Indomias* is largely based on the study of specimens obtained from field surveys and on loan from the following institutions: AC&RI, Coimbatore, Tamil Nadu; PDBC, Bangalore; and BMNH, London. The identified and unidentified specimens from the NPC formed the core of the material. These included specimens and paratypes authentically identified by Sir Guy A.K. Marshall. The species namely *I. kraatzii* (Heller), *I. sulphuratus* (Marshall) and *I. glabrirostris* Pajni could not be included for want of material.

All taxonomic characters, except the genitalia and ultrastructure of elytral vestiture were studied using intact specimens. For the study of genitalia, specimens were processed following the method of Supare *et al.*, (1990) with slight modifications. For studying the elytral vestiture, the method of Ramamurthy and Ghai (1988) was followed. The terminology of Howden (1982), Ramamurthy *et al.*, (1992) and Poorani and

Ramamurthy (1997) were followed for the description of female and male genitalia. General taxonomic characters and genitalia were studied using a WILD M8 stereo zoom microscope fitted with an ocular grid. The elytral vestiture was studied using a LEITZ ORTHOLUX II interference, phase contrast, compound microscope. Illustrations were prepared using a camera lucida.

List of abbreviations used

AC&RI	Agricultural College and Research Institute, Coimbatore, Tamil Nadu, India.
BMNH	The Natural History Museum, London, UK.
NPC	National Pusa Collection, Division of Entomology, Indian Agricultural Research Institute, New Delhi, India.
NRS	Naturhistoriska Riksmuseet, Swedish Museum of Natural History, Stockholm, Sweden.
PDBC	Project Directorate of Biological Control, Bangalore, India.
SMTD	Staatliches Museum fur Tierkunde, Dresden, Germany.
PU	Panjab University, Chandigarh, India.
ZSI	Zoological Survey of India, Kolkata, India.

Taxonomic studies

Genus *Indomias* Marshall (Gender: Masculine)

Type species: *Indomias prasinus* (Boheman, 1845); designated by Marshall, 1941: 350; Alonso-Zarazaga & Lyal, 1999: 181.

General description: **Colour** black to piceous, covered by varying shades of greenish vestiture *viz.*, pale to dense or metallic green to grey or blue grey, with stripes or patches of yellowish vestiture. **Head** Eyes dorsal, lateral or dorsolateral, variable in size and curvature. **Rostrum** longer than head but in few species shorter, shallowly or deeply emarginate at the apex, plain in few species, always with a median furrow, and also a lateral furrow bordered on each side by a carina; scrobes sublinear and always curving downwards at some distance from the eye; mandibles with a very conspicuous projecting scar, mandibular processes deciduous, epistome quite undefined, mentum with only two setae. **Antennae** with the scape hardly exceeding the middle of the eye, cylindrical, slender at the base, either gradually or abruptly clavate and curving slightly forwards when erect; funicle with segments one and two more elongate and subequal, equal in few species, segments three to six subequal and generally bead-like, segment seven longer, broader and subconical, club conical and distinctly four jointed. **Prothorax** truncate at anterior margin, posterior margin truncate or subtruncate, narrowly elevated in few species, sides rounded, anterior margin narrower than posterior margin, anterior margin with conspicuous vibrissae at the sides, the gular margin narrowly sinuate. Prosternum with front coxae either separated or contiguous and always nearer to its anterior margin; mesosternum with epimera narrow, much smaller than episterna and not separating them from base of elytra; metasternum as long as or slightly shorter than median coxae, the episterna narrow, the episternal suture distinct throughout, the hind coxae not reaching the elytra. **Scutellum** distinct and rounded. **Elytra** ovate, with a humeral fold, the lateral margin shallowly sinuate above the hind coxae, but without a distinct excision to receive the head of the metasternal episternum, punctatostriate, intervals broader than striae. **Legs** of variable length, the femora clavate, the front pair slightly thicker than others, front tibiae longer than the rest, strongly curved, denticulate internally and with a sharp, apical spine, directed inwards at right angles; median pair straight, produced internally at the apex with a short, slender spine; hind pair straight and not produced internally at the apex, hind tibiae never denticulate, hind tibial apex with a well developed outer bevel and an inner flange, with two rows of setae; tarsi with third segment broadly bilobate, claws connate or fused throughout, except at apex where they are free. **Venter** with the intercoxal process narrower, arcuate or angulate, suture between ventrites one and two distinct throughout, ventrite two, 1.5–2x as long as three and four together, throughout its length.

Key to the species of *Indomias*

1. Hind tibial apex without any dense, golden yellow hairs 2
- Hind tibial apex with well developed, dense, golden yellow hairs 24
2. Elytra more or less strongly impressed on the declivity (fig. 78, 79) 3
- Elytra not at all impressed on the declivity (fig. 80, 81) 10
3. Elytra with the outline of its posterior declivity either straight or slightly convex but never sinuate (fig. 82, 83) 4
- Elytra with the outline of its posterior declivity distinctly sinuate (fig. 78) 5
4. Antennae with first and second funicle segments equal in size (fig. 70). Elytra with the apex of its posterior declivity not having any erect, elongate scales; with a whitish, sutural stripe; and a broad, yellow, discal stripe extending from prothorax on to the intervals 5 and 6. Male genitalia with aedeagus having its apophyses 0.75x as long as the median lobe (figs. 216–217), female genitalia with the ratio of length of basal plate to that of shaft 1:3.2 (fig. 159) *perroteti* (Boheman)
- Antennae with first funicle segment 1.25x as long as the second (fig. 58). Elytra with the apex of its posterior declivity having distinct, erect, elongate scales. Male genitalia with aedeagus having its apophyses only 0.43x as long as the median lobe (fig. 201–202), female genitalia with the ratio of length of basal plate to that of shaft 1:4.5 *hispidus* (Marshall)
5. Antennae with first funicle segment as long as or only slightly longer (1.1x) than the second (figs. 63, 72) 6
- Antennae with first funicle segment at least 1.4x as long as the second (figs. 69, 74) 9
6. Elytra with their apices rounded 7
- Elytra with their apices either distinctly mucronate or pointed (fig. 78, 79) 8
7. Scrobes 0.87x as long as rostrum, head 1.1x as long as rostrum; prothorax with upper surface having shallow, scattered punctations, their interspaces tuberculate; female genitalia with spiculum ventrale having its basal plate 1.5x as long as broad (fig. 161), spermatheca with nodulus bulbous, having a cylindrical projection (fig. 147) *mayarami* **sp. nov.**
- Scrobes only 0.55x as long as rostrum, head as long as rostrum; prothorax with upper surface having coarse punctations, their interspaces obscurely granulate; elytra with third, fourth and fifth intervals impressed at declivity; male genitalia with aedeagus having length: breadth ratio 10:1 (fig. 222–223), spiculum gastrale with shaft as long as the median lobe (fig. 176) *ajaykumari* **sp. nov.**
8. Elytral vestiture with predominant scales ovate, with 5–6 ridges (fig. 126); male genitalia with median lobe having length: breadth ratio 5.5:1 (figs. 225–226), tegmen with dorsal piece 5x as broad as its basal piece, manubrium very short, only 0.31x as long as the median lobe (fig. 227); female genitalia having its spiculum ventrale with ratio of length of basal plate to that of shaft 1:4.8 (fig. 156) *mangalai* **sp. nov.**
- Elytral vestiture with predominant scales ovate, but with patches of granulated areas; male genitalia with median lobe having length: breadth ratio 8.5:1 (figs. 207–208), tegmen with dorsal piece only 2.5x as broad as its basal piece, manubrium 0.52x as long as the median lobe, its apex broadened and subconical (fig. 209); female genitalia with spermatheca having its proximal arm 3x as broad and 1.3x as long as the distal arm (fig. 140), spiculum ventrale with ratio of length of basal plate to that of shaft 1:4.3 (fig. 150) *acutipennis* (Boheman)
9. Rostrum with the anterior margin 0.85x as broad as the posterior margin; prothorax with anterior margin 0.62x as broad as posterior margin; male genitalia with aedeagus having its apophyses 0.44x as long as the median lobe (fig. 240–241), tegmen with dorsal piece 2.5x as broad as its basal piece (fig. 242), spiculum gastrale with its shaft 0.88x as long as the median lobe (fig. 182) *sharanagoudai* **sp. nov.**
- Rostrum with the anterior margin only 0.54x as broad as the posterior margin; prothorax with anterior margin 0.83x as broad as posterior margin; male genitalia with aedeagus having its apophyses 0.63x as long as the median lobe (figs. 234–235), tegmen with dorsal piece 5x as broad as its basal piece (fig. 236), spiculum gastrale with its shaft 1.06x as long as the median lobe (fig. 179) *kriparami* **sp. nov.**
10. Elytra with basal margin only slightly raised, external angle obtuse (Fig. 80, 81) 11
- Elytra with basal margin strongly raised, external angle perpendicular or acute (Fig. 84, 85) 12
11. Head as long as rostrum, antennae with first funicle segment only 0.85x as long as the second (fig. 62), rostrum 1.1x as broad as long; elytra with their apices mucronate in both sexes, interval three distinctly raised over two at the posterior declivity near apex; male genitalia having tegmen with its dorsal piece very long, 0.2x as long as the manubrium, and 3x as broad as the basal piece (fig. 215) *prasinus* (Boheman)
- Head 1.1x as long as rostrum, antennae with first funicle segment 1.1x as long as the second (fig. 60), rostrum as broad as long, with scrobes much longer, 0.8x as long as rostrum; elytra with their apices scarcely or not mucronate, stria with large and deep punctations, intervals three and five 1.33x as broad as others and more raised; male genitalia with tegmen having its dorsal and basal piece equal, length: breadth ratio of median lobe 5.3:1 (figs. 219–220) *lividus* (Marshall)
12. Rostrum strongly impressed at the middle dorsally (Fig. 16, 22, 37, 39) 13
- Rostrum plain dorsally or at the most very shallowly impressed at the middle (Fig. 20) 17

13. Antennae with first funicle segment either shorter or only slightly longer (1.1:1) than second; elytra with intervals four, five and six not impressed on their posterior declivity 14
- Antennae with first funicle segment at least 1.3–1.5x as long as the second; elytra with intervals four, five and six either slightly or deeply impressed on their posterior declivity 15
14. Prothorax as long as broad, upper surface with shallow, confluent punctations; elytra with intervals coriaceous, humeral fold much less developed, their apices mucronate in both sexes, vestiture with the less predominant scales oval, bluish orange with bifurcated ridges (fig. 98); male genitalia with aedeagus having the length: breadth ratio of median lobe 7:1, apophyses 0.66x as long as the median lobe (figs. 204–205), tegmen with parameres very long and 0.33x as long as the manubrium (fig. 206) *praeteritus* (Marshall)
- Prothorax 1.06x as broad as long, upper surface rugosely punctate with interspaces granulate; elytra with their apices rounded, humeral fold prominent, vestiture with the less predominant scales elongate, their inner core opaque and granulated with four ridges (fig. 123); male genitalia with aedeagus having the length: breadth ratio of median lobe 6:1, apophyses only 0.42x as long as the median lobe (figs. 237–238), spiculum gastrale with the apex of its shaft clefted (fig. 180); venter with segments one and two having long, fine and recumbent setae ... *premlali* **sp. nov.**
15. Elytra with their apices rounded, vestiture with the predominant scales circular, reddish brown, with patches of granulated areas (fig. 116), humeral fold small and not projecting; male genitalia with tegmen having its dorsal piece 3x as broad as the basal piece, manubrium with apex enlarged and rounded (fig. 230) *ramakrishnani* **sp. nov.**
- Elytra with their apices either distinctly mucronate or at least separately pointed, vestiture with the predominant scales either elongate or subrectangular, but invariably with ridges 16
16. Head as long as rostrum, rostrum as long as broad, median furrow club shaped, ending in a narrow, faint line before reaching the vertex; elytral vestiture with the predominant scales curved, elongate, reddish brown with a short pedicel, their inner core opaque with 2–4 ridges (fig. 114). Female genitalia with spiculum ventrale having its basal plate spatulate and slightly longer than broad (1.1:1) (fig. 155) *rajendrani* **sp. nov.**
- Head only 0.8x as long as rostrum, rostrum 1.05x as long as broad, median furrow short, broad and oval; elytral vestiture with the predominant scales subrectangular to subovate, yellow, with 9–10 ridges (fig. 118); male genitalia with aedeagus having the length: breadth ratio of median lobe 9:1, apophyses 0.77x as long as the median lobe (figs. 231–232), tegmen with dorsal piece 7x as broad as basal piece (fig. 233) *maicykuttyae* **sp. nov.**
17. General colour always characterized by a bright yellow, powdery vestiture; elytra with apices scarcely mucronate in male and with a short mucro in female; rostrum with lateral carinae gradually convergent behind; legs with second joint of tarsi bearing at least a few scales *sulphuratus* (Marshall)
- General colour never characterized by a yellow vestiture, either grey or green or metallic green; elytral with apices rounded in male, either pointed separately or scarcely mucronate or with well defined mucro in female 18
18. Antennae with first funicle segment distinctly longer than second (1.3 to 1.5:1) (Fig. 57, 65) 19
- Antennae with first funicle segment either equal to or only slightly longer than the second (1.1:1) (Fig. 53, 54, 55, 56, 76) 20
19. Head with nine distinct rows of elongate, curved scales, slightly shorter than rostrum (1:1.1); elytral vestiture with the predominant scales elongate, reddish brown with their base truncate and apex rounded, with 4–5 ridges (fig. 111); female genitalia with spermatheca having nodule rounded (fig. 145), spiculum ventrale with the basal plate laminate, apical half subconical and basal half trapezoidal (fig. 149) *marshalli* **sp. nov.**
- Head with a faint, broad, transparent impression behind the eyes, vertex with a median fovea, elytra with disk as far as the fourth stria covered mainly with black vestiture, first interval somewhat raised at apex, elytral vestiture with predominant scales subcircular, light brown, with surface irregularly impressed (fig. 94). Male genitalia with manubrium very short, only 0.17x as long as the median lobe (fig. 200) *beesoni* (Marshall)
20. Elytra with humeral fold only slightly developed, its longitudinal curvature less convex or almost flat, deepest near the base and becoming abruptly steeper towards the apex, ratio of length of elytra from basal margin to the posterior declivity and from the posterior declivity to apex 4:1; head 1.1x as long as rostrum; male genitalia with aedeagus having its length: breadth ratio of median lobe 9:1 (figs. 192–193), tegmen with manubrium only 0.33x as long as the median lobe, bent at apex (fig. 194), spiculum gastrale with its shaft only 0.66x as long as the median lobe (fig. 166) *decipiens* (Marshall)
- Elytra with the humeral fold prominent, its longitudinal curvature either moderately or much convex, deepest near the middle and gradually sloping behind, male genitalia with tegmen having its manubrium never less than 0.5x as long as the median lobe, and never bent at apex, spiculum gastrale with shaft at least equal to slightly longer than median lobe 21
21. Elytra with intervals five and six with an impression at base; prothorax with a uniformly broad median stria, rounded at both ends, and running in the posterior two thirds; male genitalia with aedeagus having the length: breadth ratio of median lobe 10:1, apophyses 0.85x as long as the median lobe, endophallus with a sclerotized patch (figs. 252–253) *yercaudensis* **sp. nov.**
- Elytra with intervals five and six without any impression at base; prothorax without any median stria; male genitalia with aedeagus having its apophyses only 0.5–0.6x as long as the median lobe, endophallus never with a sclerotized

- patch 22
22. General vestiture metallic or bluish green, elytra with a yellow patch at the base and at the apex of intervals four and five, with inflexed margins of prothorax and elytra with yellow powdering, elytral vestiture with the scales having pedicel (figs. 89–91); male genitalia with tegmen having its dorsal piece 7x as broad as the basal piece and 0.44x as long as the median lobe (fig. 197); female genitalia with spermatheca having its proximal arm without any distinction between nodulus and ramus, distal arm almost parallel to the proximal arm, and the angle between them steeply acute (fig. 139) *frater* (Marshall)
- General vestiture pale green or grey, but never metallic green; elytra without any yellow patch at the base of intervals; elytral vestiture with scales devoid of pedicel; female genitalia with spermatheca having its nodulus and ramus distinct, distal arm never parallel to the proximal arm and angle between them obtuse 23
23. Elytra with vestiture uniform pale green, without any pollinose, lateral stripe, its longitudinal curvature much convex, deepest near the middle, gradually sloping behind, ratio of length of elytra from basal margin to the posterior declivity and from posterior declivity to the apex 0.9:1, apices rounded in male, pointed in female; female genitalia with spermatheca having its nodulus globular, spiculum ventrale with the ratio of length of basal plate to that of shaft 1:3; male genitalia with aedeagus having the length: breadth ratio of median lobe 5.8:1, tegmen with dorsal piece 3x as broad as the basal piece *cretaceus* (Faust)
- Elytra with an ochreous yellow, lateral stripe on intervals six and seven, extending inwards at the base and near apex as far as interval four and with a similar stripe on the prothorax, its longitudinal curvature moderately convex, their apices pointed in male and mucronate in female; female genitalia with spermatheca having nodulus small and notched, spiculum ventrale with the ratio of length of basal plate to that of shaft 1:5 (fig. 158); male genitalia with aedeagus having the length: breadth ratio of median lobe 9:1 (figs. 210–211), tegmen with dorsal piece 8x as broad as basal piece (fig. 212) *anamalainus* (Marshall)
24. General body size with length at least 3x or more as the breadth 25
- General body size with length: breadth ratio never more than 3:1 26
25. Rostrum with lateral carinae extending posteriorly beyond the anterior margins of eyes, at least to a distance of 0.25x the length of an eye; prothorax only 1.01x as broad as long, without any median stria; antennae with first funicle segment only 1.25x as long as the second (fig. 75); male genitalia with aedeagus having its apophyses 0.66x as long as the median lobe (figs. 249–250), spiculum gastrale with its shaft truncate at apex (fig. 184) ... *dubeyi* **sp. nov.**
- Rostrum with lateral carinae not extending beyond the anterior margin of eyes; prothorax at least 1.25x as broad as long, and with a deep, median stria in its posterior two thirds; antennae with first funicle segment at least 1.43x as long as the second (fig. 64); female genitalia with spiculum ventrale having its basal plate ovate, only 0.2x as long as its shaft and 1.5x as long as broad (fig. 160) *albizziae* **sp. nov.**
26. Rostrum as long as broad, shallowly impressed dorsally, a juxta marginal carina runs from its apex to just above the eye; prothorax longer than broad and sharply constricted at apex, its greatest breadth almost equal to that of elytra, with a fine median stria which does not reach apex *kraatzi* (Heller)
- Rostrum 1.2x as broad as long, deeply impressed dorsally, without any juxta marginal carina; prothorax 1.2x as broad as long, without any constriction at its apex, its greatest breadth never equal to that of elytra, with a deep median stria which is rounded posteriorly and straight anteriorly, restricted to posterior one thirds .. *menoni* **sp. nov.**

Description of species

1. *Indomias acutipennis* (Boheman)

(figs. 5, 32, 59, 97, 140, 150, 171, 207, 208 and 209)

Brachyaspistes acutipennis Boheman, 1845: 415; Marshall, 1916: 166

Sympiezomias acutipennis (Boheman); Marshall, 1916: 165; 1941: 350 [NRS]

Description: **Colour** black, with chalky white vestiture, more or less tinged yellow at the sides, which is sparse on disk, but much denser laterally and beneath. **Head** as long as rostrum, upper surface finely coriaceous, with scattered, coarse punctations. **Rostrum** shallowly impressed above, as long as broad, anterior margin 0.9x as broad as posterior margin; median furrow club shaped, rounded at either ends, narrowing posteriorly and extending upto middle of eyes; lateral carinae distinct throughout the length of rostrum; upper surface coarsely punctate; sides straight and parallel; scrobes rounded anteriorly and pointed posteriorly, 0.6x as long as rostrum. Eyes dorsolateral, convex, 2x as long as broad (figs. 5 and 32). **Antennae** brown; sparsely hairy; scape gradually clavate, funicle with first segment 1.1x as long as the second, third and

fourth subequal, fifth and sixth equal; club conical (fig. 59). Prothorax 1.1x as broad as long (male), slightly longer than broad (female), broadest at a little distance away from middle towards anterior margin and 1.07x as broad as posterior margin; sides rounded anteriorly, straight at middle, anterior margin only 0.7x as broad as posterior margin, subtruncate dorsally and acute laterally, posterior margin truncate, basal lobe slightly emarginate; upper surface finely sculptured, with shallow, confluent punctations, usually hidden by vestiture and without any median stria. Legs with hind tibial apex without any dense, golden yellow hairs. **Elytra** ovate, with basal margin strongly raised, external angle acute, humeral fold prominent, slightly broader behind middle, strongly impressed on posterior declivity; apices sharply mucronate in both sexes; stria finely punctate; intervals broad and convex; elongate scales very short and depressed, more noticeable on declivity, posterior declivity distinctly sinuate; elytral vestiture with predominant scales oval, brown, with patches of granulated areas (fig. 97).

Male genitalia: Aedeagus with median lobe in profile evenly arcuate at base, broadest at its junction with apophyses, its apex pointed, length: breadth ratio 8.5:1; apophyses 0.52x as long as median lobe (figs. 207–208). Tegmen with dorsal piece 2.5x as broad as basal piece; parameres short, slender, their apices indistinct; manubrium elongate, slender, 0.52x as long as median lobe, uniformly thick, with a broadened, subconical apex (fig. 209). Spiculum gastrale with shaft 1.08x as long as median lobe, broadest at middle, apex much narrowed, slightly deflected and blunt; basal prongs equal, their apices slightly rounded (fig. 171).

Female genitalia: Spermatheca with proximal arm 3x as broad and 1.3x as long as distal arm, subcylindrical, angle between proximal and distal arms obtuse; nodulus bulbous; ramus rectangular, 2x as broad as nodulus; cornu tubular, its apex rounded (fig. 140). Spiculum ventrale with shaft elongate, uniformly thick, but widened towards the rounded apex; basal plate longer than broad (1.3:1), spatulate with basal half subtrapezoidal, its apical half subconical, apex blunt and bare, ratio of length of basal plate to that of shaft 1:4.3 (fig. 150).

Length: male, 7–8.00 mm; female, 8–8.30 mm. **Breadth:** male, 2.25–2.50 mm; female, 2.75–3.25 mm.

Specimens examined: 1 male, 2 female, INDIA: Kerala: Malabar: Dhony forests, 26.V.1922, Coll. Ramakrishna; 1 male, Peermad: VI.1922, Coll. E.B (NPC).

Distribution: India: Kerala

Taxonomic note: Marshall (1916) states apical margin of prothorax obliquely truncate but observed to be acutely subtruncate and prothorax broadest at a little distance away from the middle towards anterior margin, not exactly at middle as stated by Marshall (1916).

2. *Indomias ajaykumari* Ramamurthy sp. nov.

(figs. 11, 42, 63, 107, 108, 176, 222, 223 and 224)

Diagnosis: This species closely resembles *I. acutipennis* (Boheman) and is distinguished by the following characters: Rostrum with median furrow short, broad, and posteriorly pointed; deeply impressed in the middle. Male genitalia with apex of manubrium blunt; ratio of length of dorsal piece (inclusive of parameres) and manubrium 1: 1.25; median lobe with its curvature not sharp. Elytra with the outline of posterior declivity sinuate; humeral fold present but not prominent; apices rounded. Prothorax 1.02x as broad as long.

Description: **Colour** black with pale or dull green vestiture. **Head** as long as rostrum, upper surface flat, with shallow, confluent punctations. **Rostrum** as long as broad at posterior margin; breadth at anterior margin 0.75x as that of posterior margin; deeply impressed at the middle dorsally; median furrow short, broad anteriorly, pointed posteriorly; lateral carinae distinct, running throughout length of rostrum; sides straight, parallel towards anterior margin; scrobes uniformly broad throughout, but pointed near the eyes, scrobes only 0.55x as long as rostrum, space between scrobes as much as breadth of rostrum at anterior margin. Eyes dorsal, oval and less convex (figs. 11 and 42). **Antennae** dark or reddish brown; funicle with first segment 1.1x as long as second, rest of the funicle segments bead like, seventh largest; club conical (fig. 63). Prothorax 1.02x as broad as long, its breadth at middle 1.1x as its breadth at posterior margin; sides almost straight, narrowed towards anterior margin, only 0.78x as broad as the posterior margin; anterior margin and posterior

margin truncate dorsally, acute laterally, upper surface with coarse punctations, interspaces obscurely granulate, without any median stria. Legs with hind tibial apex without any dense, golden yellow hairs. **Elytra** ovate, with basal margin strongly raised, humeral fold present but not very prominent; more or less strongly impressed on declivity, posterior declivity distinctly sinuate; apices rounded; stria punctatostriate, intervals broad, convex and raised, third, fourth and fifth impressed on the declivity, short elongate scales seen on declivity; elytral vestiture with predominant scales subcircular to ovate, pinkish with 20–23 ridges, interspaces with granulated areas (fig. 107), less predominant elongate, their apices broad, inner core opaque, granulated and with 5–6 ridges (fig. 108).

Male genitalia: Aedeagus with median lobe distinctly elongate, membranous at middle, length: breadth ratio 10:1, slightly broader at middle but narrowed towards ends, apex narrowly rounded; in profile median lobe arcuate at base; apophyses thin, their apices pointed and hooked, only 0.5x as long as median lobe; transfer apparatus less sclerotized, ejaculatory duct short (fig. 222–223). Tegmen with dorsal piece at least 4–5x as broad as basal piece; parameres long, slender, papillate and pointed; manubrium uniformly thick, with a slightly bent and blunt apex, only 0.5x as long as median lobe (fig. 224). Spiculum gastrale long, slender, as long as median lobe; basal prongs subequal, their apices pointed (fig. 176).

Length: male, 8.97 mm; **Breadth:** male, 3.30 mm.

Holotype: 1 male, INDIA: Kerala: Malabar: Dhony forests, 26.V.1922. Coll. Ramakrishna (NPC).

Distribution: India: Kerala.

Etymology: The name *I. ajaykumari* **sp. nov.** is derived from and in recognition of Dr. Ajay Kumar Ganguly, Principal Scientist (PPI), IARI, New Delhi, and his support for research project management.

3. *Indomias albizziae* Ramamurthy **sp. nov.**

(figs. 13, 41, 64, 101, 143 and 160)

Diagnosis: This species resembles *I. kraatzi* (Heller) and *I. menoni* **sp. nov.**, from which it is distinguished by the following characters: Prothorax 1.25x broad as long, its greatest width is less than greatest width of elytra. Fore legs with apex of femur never black and wrinkled. General body size with length: breadth ratio equal to or more than 3:1. Female genitalia with spiculum ventrale having its basal plate ovate, spermatheca with proximal arm as long as distal arm.

Description: **Colour** black, with dull green or apple green vestiture; sides of prothorax and elytra with metallic green vestiture, rarely interspersed with reddish tinged scales. **Head** as long as rostrum, upper surface moderately convex, finely coriaceous, with shallow confluent punctations; vertex impressed. **Rostrum** shallowly impressed at the middle dorsally, 1.1x as broad as long, breadth at anterior margin 0.77x as that of posterior margin; median furrow uniformly broad throughout, reaching the middle of eyes; lateral carinae do not extend beyond the anterior margin of eyes; sides narrowed towards anterior margin, but almost parallel; scrobes narrowed towards anterior margin of rostrum, uniformly broad, 0.6x as long as rostrum, smoothly rounded posteriorly. Eyes almost lateral, circular, moderately convex (figs. 13 and 41). **Antennae** piceous; scape very slender; with first funicle segment 1.43x as long as second, thick and broad (fig. 64). Prothorax subcylindrical, 1.25x as broad as long, its breadth at middle only 1.02x as the breadth at posterior margin; sides rounded at the front and constricted behind; anterior margin 0.75x as broad as the posterior margin, truncate dorsally, vertical laterally; posterior margin truncate, its basal lobe emarginate; upper surface rugosely punctate, interspaces obscurely granulate, median stria deep, found at the posterior two thirds. Legs with hind tibial apex having well-developed, dense golden yellow hairs. **Elytra** broadly ovate, with basal margin slightly raised, humeral fold present but not prominent; apices slightly mucronate; stria finely punctate, intervals broad, almost plain, second and third impressed at the posterior declivity, elongate scales inconspicuous; elytral vestiture with broadly ovate scales, having patches of granulated areas (fig. 101).

Female genitalia: Spermatheca with proximal arm subequal to distal arm, as long as and 2x as broad as the cornu, angle between them obtuse; nodulus triangular, with apex pointed; ramus almost cuboidal, 2x as broad as nodulus; cornu long, tubular, its apex bent and bluntly rounded (fig. 143). Spiculum ventrale with

shaft thickened towards apex, otherwise slender; basal plate ovate, 1.5x as long as broad, only 0.2x as long as the shaft, its apex rounded with 5–6 short, stout hairs (fig. 160).

Length: female, 9.54 mm; *Breadth*: female, 3.24 mm.

Holotype: 1 female, INDIA: without locality and collector name, forest campus, 8.IV.1994, on *Albizia lebbbeck* (NPC).

Distribution: India.

Etymology: It is named after the host *Albizia lebbbeck* on which it was found.

4. *Indomias anamalainus* (Marshall)

(figs. 10, 36, 56, 92, 93, 141, 158, 172, 210, 211 and 212)

Sympiezomias anamalainus Marshall, 1916: 168; 1941: 350 [BMNH]

Description: **Colour** black, with thin, grey or bluish grey vestiture; prothorax with an ochreous yellow, lateral stripe; elytra with a similar stripe on the intervals six and seven, extending inwards at the base and near the apex as far as interval four, and with ochreous vestiture along the margin. **Head** as long as rostrum, upper surface moderately convex, finely punctate; frons with a median stria, which fuses with median furrow of rostrum and extending a little on to vertex. **Rostrum** plain dorsally, as long as broad, anterior margin only 0.8x as broad as the posterior margin; median furrow longer, broadest anteriorly, narrower posteriorly; lateral carinae distinct, parallel posteriorly; sides straight; scrobes narrow, uniformly thick, 0.8x as long as rostrum and almost touching either ends. Eyes dorsolateral, strongly convex, space between eyes 0.88x as the space between scrobes and as much as the breadth of rostrum at posterior margin (figs. 10 and 36). **Antennae** piceous; scape abruptly clavate; funicle with first segment as long as but little broader than second, third and fourth equal and broader than fifth and sixth, subequal, seventh triangular; club slightly broader and conical (fig. 56). Prothorax 1.1x as broad as long, its breadth at middle 1.2x as the posterior margin; sides smoothly rounded; anterior margin 0.9x as broad as the posterior margin, truncate dorsally and acute laterally, posterior margin subtruncate; upper surface more coarsely punctate. Legs with second tarsal segment without any trace of vestiture in the form of scales. Legs with hind tibial apex without any dense, golden yellow hairs. **Elytra** broadly (female) or narrowly ovate (male), with basal margin strongly raised, its external angle acute, humeral fold prominent and projecting, posterior declivity not impressed; apices mucronate (female) or pointed and not mucronate (male); longitudinal curvature moderately convex, deepest near middle and gradually sloping behind; stria deeply punctate; intervals broad, convex, moderately raised; elongate scales on the discal area much smaller; elytral vestiture with two types of scales, found in equal proportions. First type perfectly round, brown and with inner core granulated (fig. 92); second type elongate, their apices broader, with 3 ridges (fig. 93).

Male genitalia: Aedeagus with median lobe broadest at middle and at its junction with apophyses, length: breadth ratio 9:1; in profile apex pointed; transfer apparatus massive and conical; apophyses 0.57x as long as the median lobe (figs. 210–211). Tegmen with dorsal piece 8x as broad as the basal piece; parameres short, tubular, their apices poorly defined; manubrium uniformly thick, 0.5x as long as the median lobe, longer than tegmen, 1.2x as long as tegmen, its apex slightly bent and rounded (fig. 212). Spiculum gastrale with its shaft 1.1x as long as median lobe, uniformly thick but narrowed towards bluntly rounded apex; basal prongs triangular, subequal, their apices rounded (fig. 172).

Female genitalia: Spermatheca with proximal arm bulbous, 3x as broad as the distal arm, 1.33x as long as cornu, angle between proximal and distal arms obtuse; nodulus short, notched and continuous with apex of proximal arm; ramus 3x as broad as nodulus, more or less rectangular; cornu 0.33x as broad as proximal arm, slightly narrowed and rounded at apex (fig. 141). Spiculum ventrale with its shaft elongate, 5x as long as basal plate, uniformly thick, its apex bluntly pointed; basal plate laminate, with a short, pedicellate base, longer than broad (1:0.6), apical half subconical, apex rounded and fringed with many, thick hairs (fig. 158).

Length: male, 7.4–7.85 mm; female, 10.63 mm. *Breadth*: male, 2.85 mm; female, 3.99 mm.

Specimens examined: 1 male, INDIA: Tamil Nadu: Anamalais: Mount Stuart, 7.XII.1917, Coll. Y. R. Rao; 1 female, Kodaikanal, 5000 ft, 17.I.1917, Coll. Royal; 1 female, Tamil Nadu: Pulney hills, 4500 ft, 10–11.V.1917, Coll. P. S. Nathan (NPC).

Distribution: India: Tamil Nadu; Anamalais; Kodaikanal; Palani hills.

5. *Indomias beelsoni* (Marshall)

(figs. 6, 34, 57, 94, 168, 198, 199 and 200)

Sympiezomias beelsoni Marshall, 1921: 165; 1941: 350 [BMNH]

Description: Colour black, head and rostrum with thin bluish grey vestiture; prothorax with vestiture sparse, dull blue dorsally, sides entirely clothed with dense, metallic green vestiture; elytra with disk, as far as the fourth stria, covered mainly with black vestiture, interspersed with green scales, which are sometimes denser along the suture, beyond fourth stria, sides clothed with dense, pale green vestiture, almost to the margin, inner edge of green area being very irregular; the lower surface with dense, greyish green vestiture. **Head** 0.87x as long as rostrum, upper surface convex, with coarse punctations, usually confluent longitudinally, with a faint, broad, transparent impression behind the eyes; vertex with a median fovea and rarely with a median stria. **Rostrum** shallowly impressed at middle, 1.1x as long as broad, anterior margin 0.68x as broad as the posterior margin; median furrow broad and rounded anteriorly, narrowed and pointed posteriorly; lateral carinae run through length of rostrum and parallel throughout; sides straight and parallel posteriorly; scrobes broader and rounded anteriorly and narrow, sharply pointed and parallel to eyes posteriorly. Eyes dorsal and convex, space between eyes as much as between scrobes (figs. 6 and 34). **Antennae** piceous; scape gradually clavate; funicle with first segment 1.33x as long as second, third to sixth bead like and equal; club much broader than funicle segments and conical (fig. 57). Prothorax 1.07x as broad as long, broadest at about middle, where it is 1.1x as broad as posterior margin; sides gently rounded, narrowed anteriorly; anterior margin only 0.77x as broad as posterior margin, truncate dorsally and oblique laterally, posterior margin subtruncate with its basal lobe emarginate; upper surface with coarse, confluent punctations, interspaces finely and sparsely punctate, without any dorsal stria or impressions, elongate scales very short, flattened and recumbent. Legs with hind tibial apex without any dense, golden yellow hairs. **Elytra** narrowly ovate (male) or slightly broader (female), basal margin strongly raised, external angle acute, humeral fold not very prominent, posterior declivity not impressed; striae deeply punctate; intervals slightly convex and of even height, excepting first, which is somewhat raised at apex, flattened elongate scales short, recumbent and inconspicuous at the basal half, longer and more curved behind; elytral vestiture with predominant scales subcircular, light brown, with surface irregularly impressed (fig. 94).

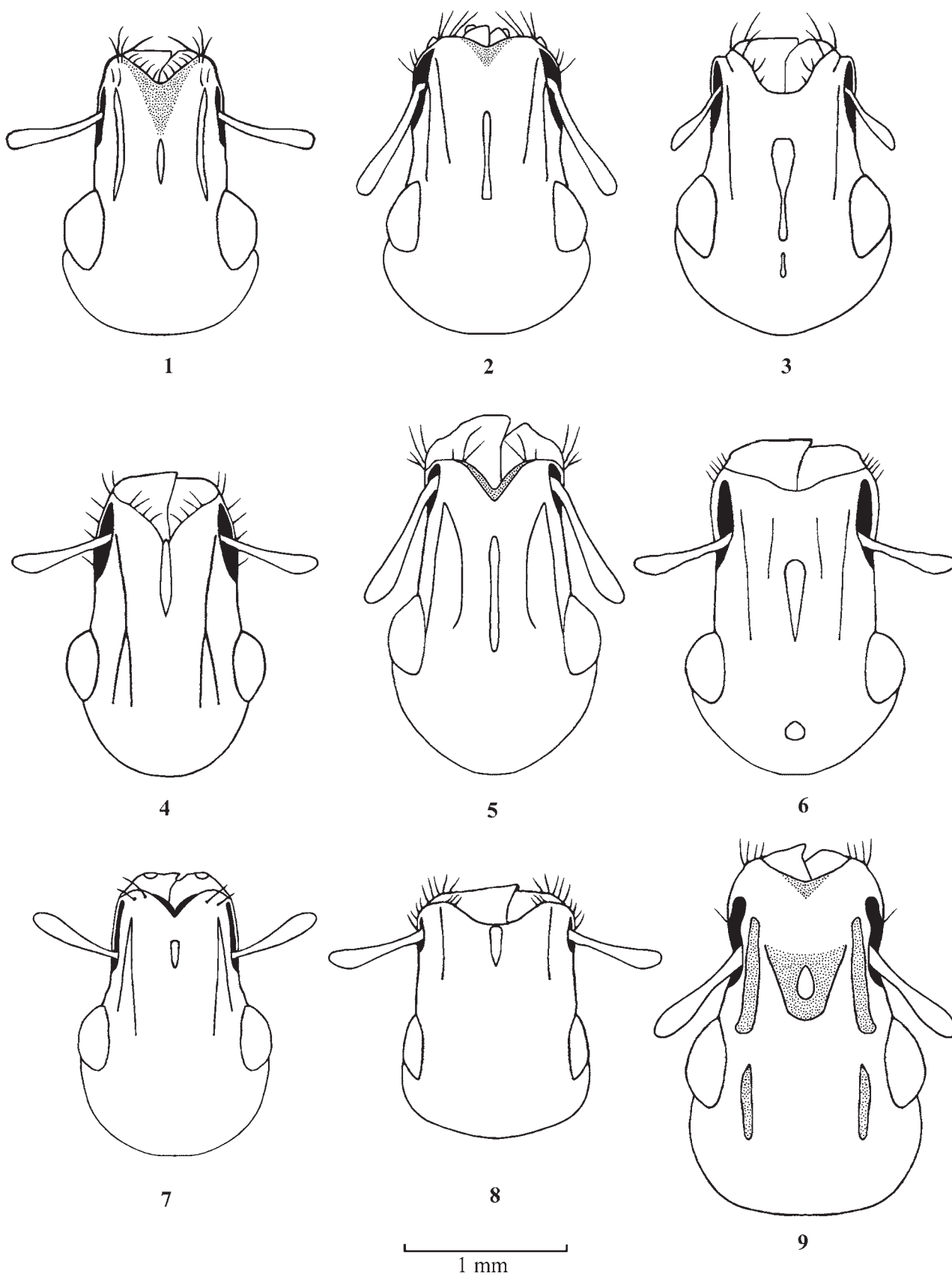
Male genitalia: Aedeagus with median lobe slender; in profile slightly arcuate, apex rounded, ejaculatory duct distinct; length: breadth ratio 8.5:1; apophyses 0.41x as long as median lobe (figs. 198–199). Tegmen with dorsal piece 3x as broad as basal piece and very long, as long as manubrium; parameres short, uniformly broad, apices indistinct; manubrium slender, very short, only 0.17x as long as median lobe, with apex blunt (fig. 200). Spiculum gastrale with shaft 0.94x as long as manubrium, uniformly broad, with apex broadened and smoothly rounded; basal prongs subequal, their apices pointed (fig. 168).

Length: male, 7.5–8.85 mm; **Breadth:** male, 3.00–3.5 mm.

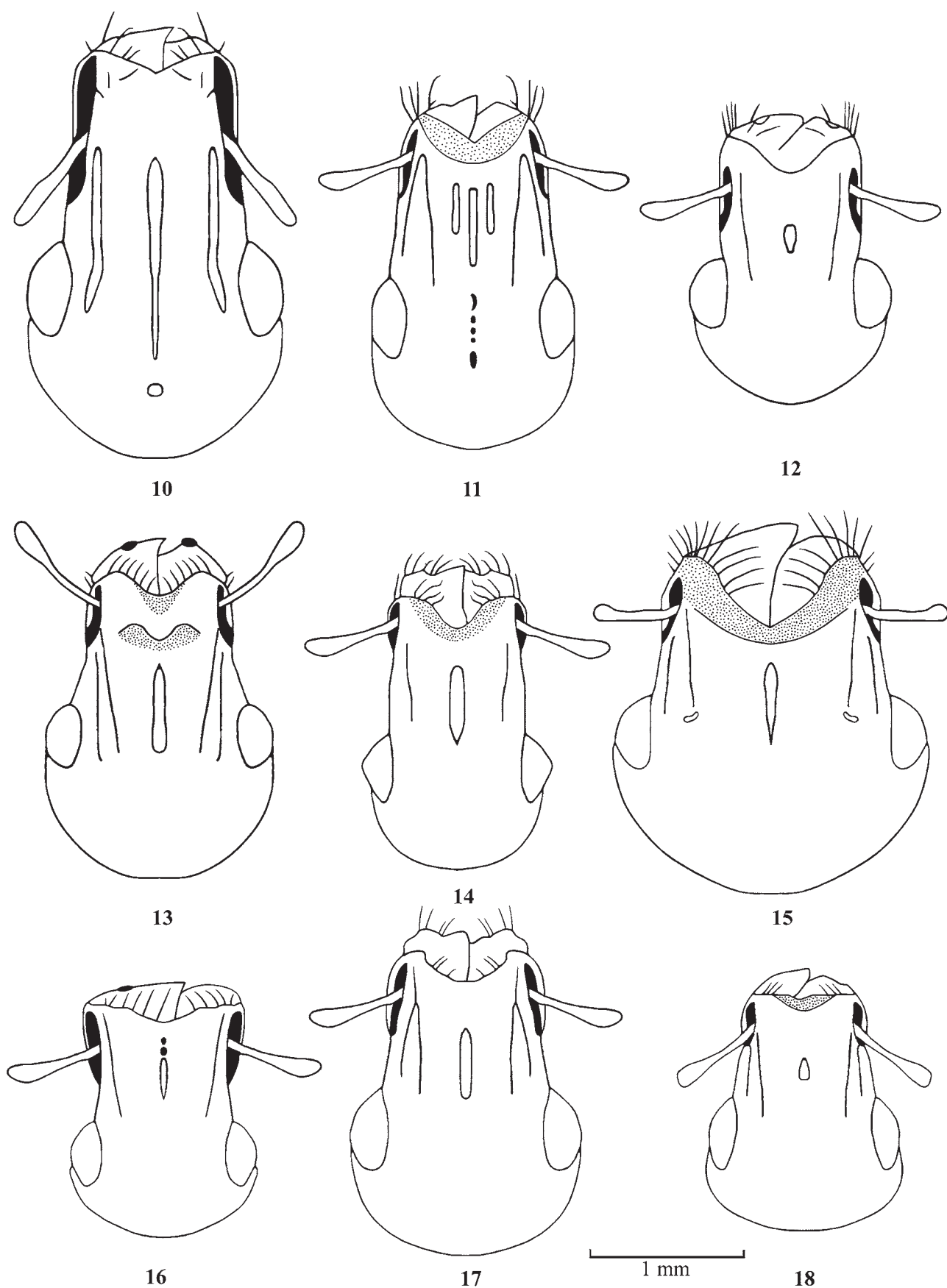
Specimens examined: 1 male, INDIA: Tamil Nadu: Nilambur, 15.VIII.1925, Coll. C.F.C. Beeson; 1 male, Aravallicava, 21.VIII.1925, Coll. S. N. Chatterjee (NPC).

Associated habitat: Teak.

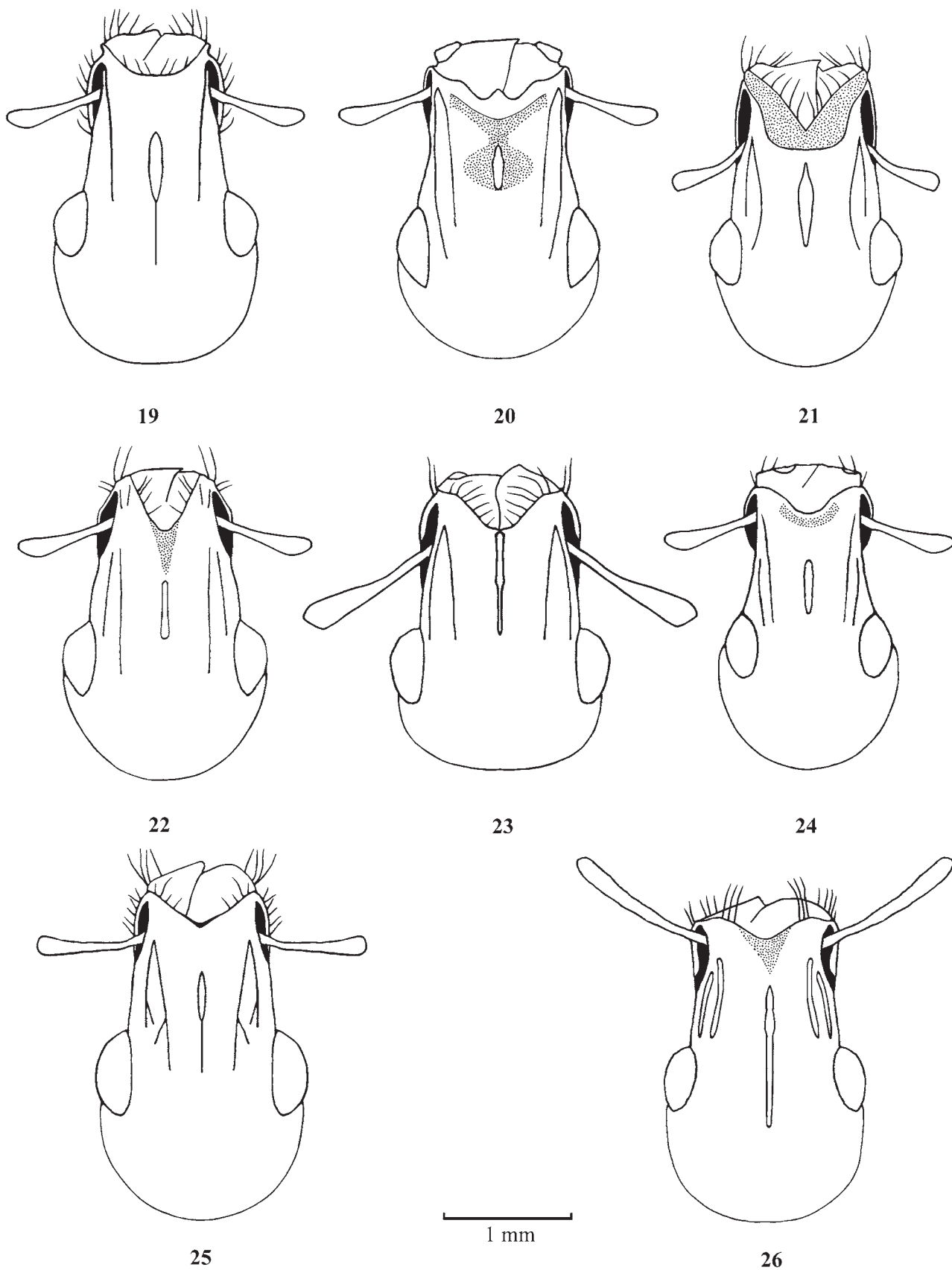
Economic importance: This species feeds on the leaves of young teak and in some cases, defoliate the trees (Marshall, 1921).



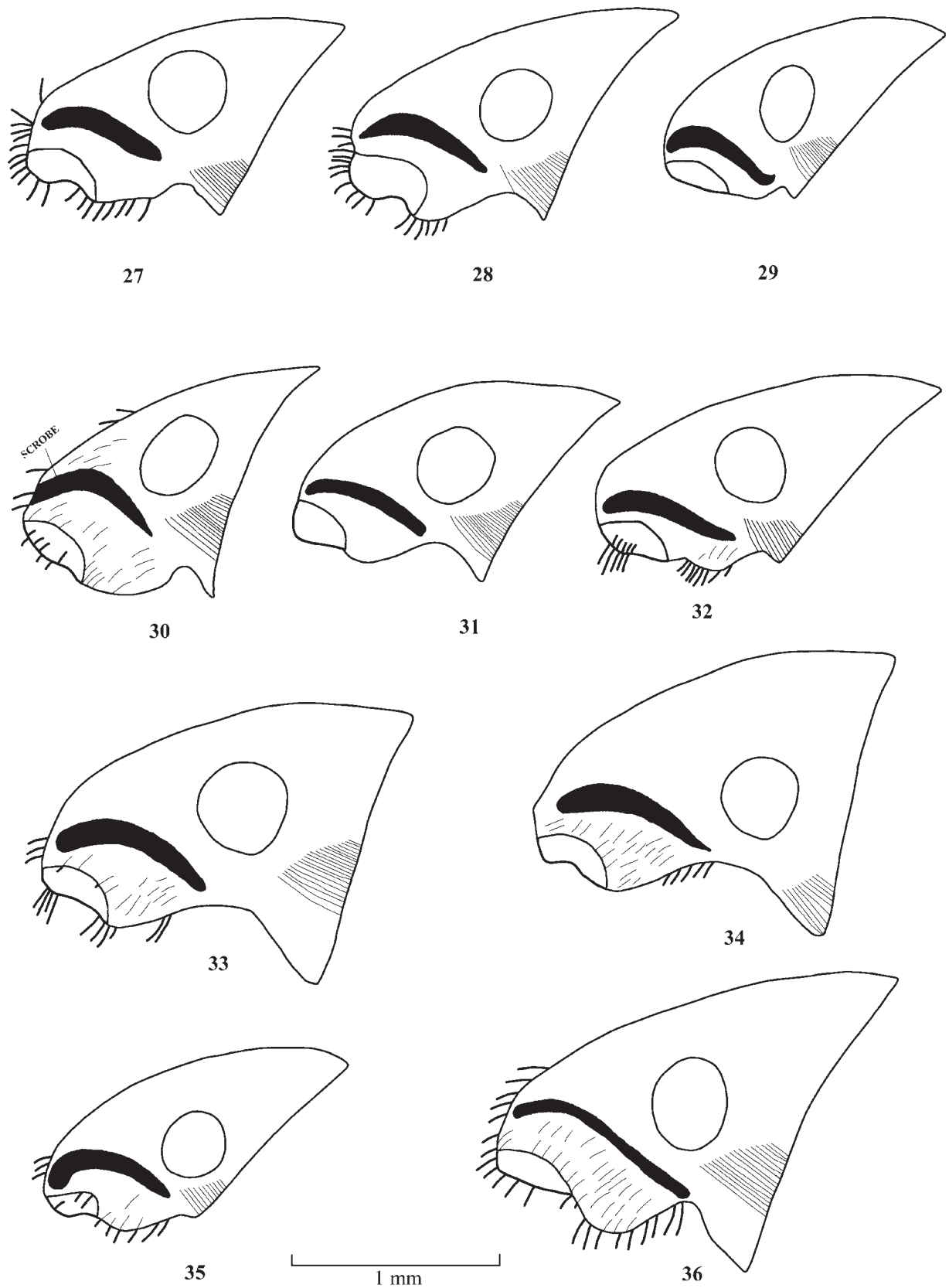
FIGURES 1–9. Head, dorsal view, of: *Indomias*. 1, *decipiens* (Marshall); 2, *cretaceus* (Faust); 3, *hispidus* (Marshall); 4, *ramakrishnani* **sp. nov.**, 5, *acutipennis* (Boheman); 6, *beesoni* (Marshall); 7, *perroteti* (Boheman); 8, *frater* (Marshall); 9, *lividus* (Marshall).



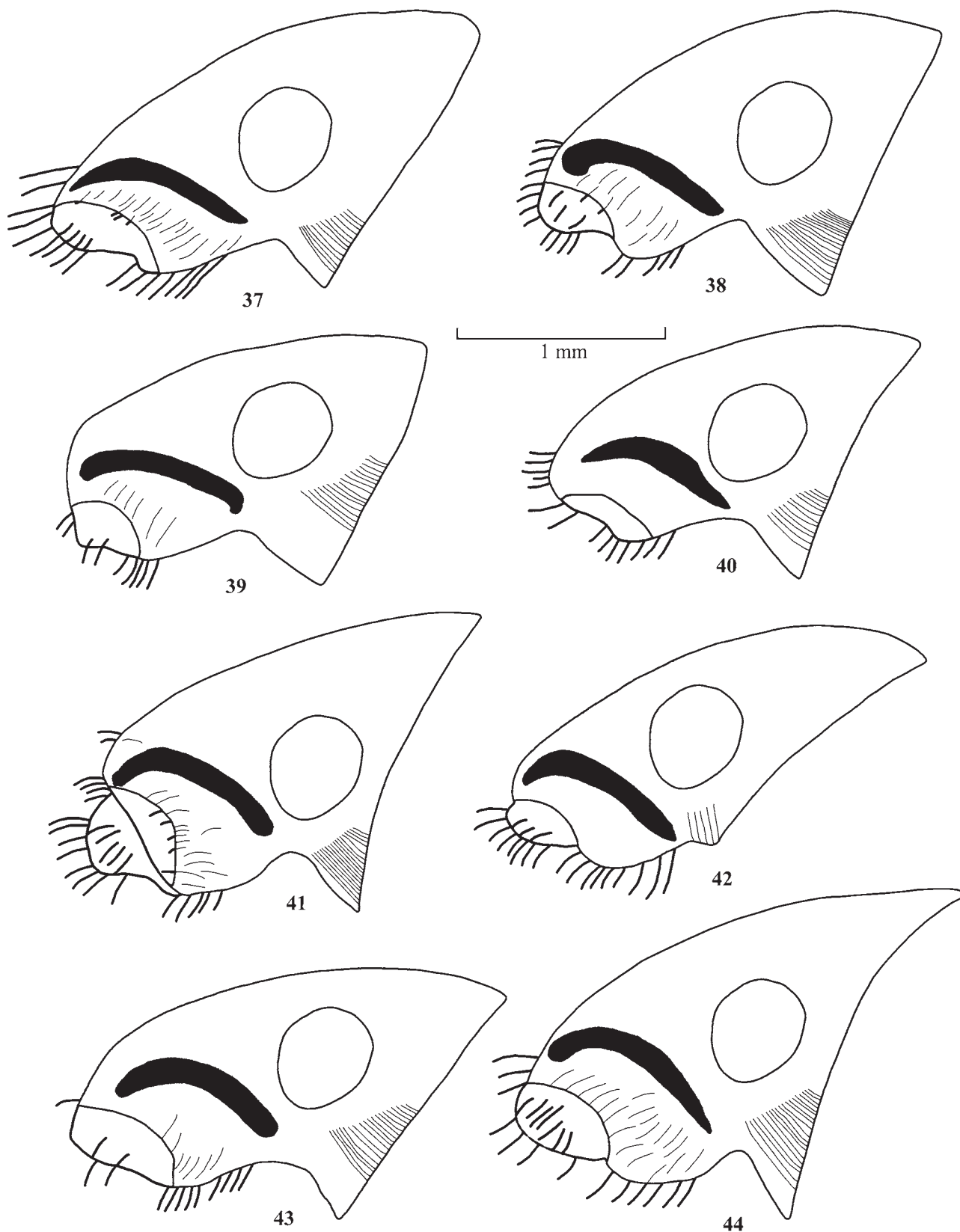
FIGURES 10–18. Head, dorsal view, of: *Indomias*. 10, *anamalainus* (Marshall); 11, *ajaykumari* sp. nov.; 12, *prasinus* (Boheman); 13, *albizziae* sp. nov.; 14, *mangalai* sp. nov.; 15, *menoni* sp. nov.; 16, *praeteritus* (Marshall); 17, *marshalli* sp. nov.; 18, *yercaudensis* sp. nov.



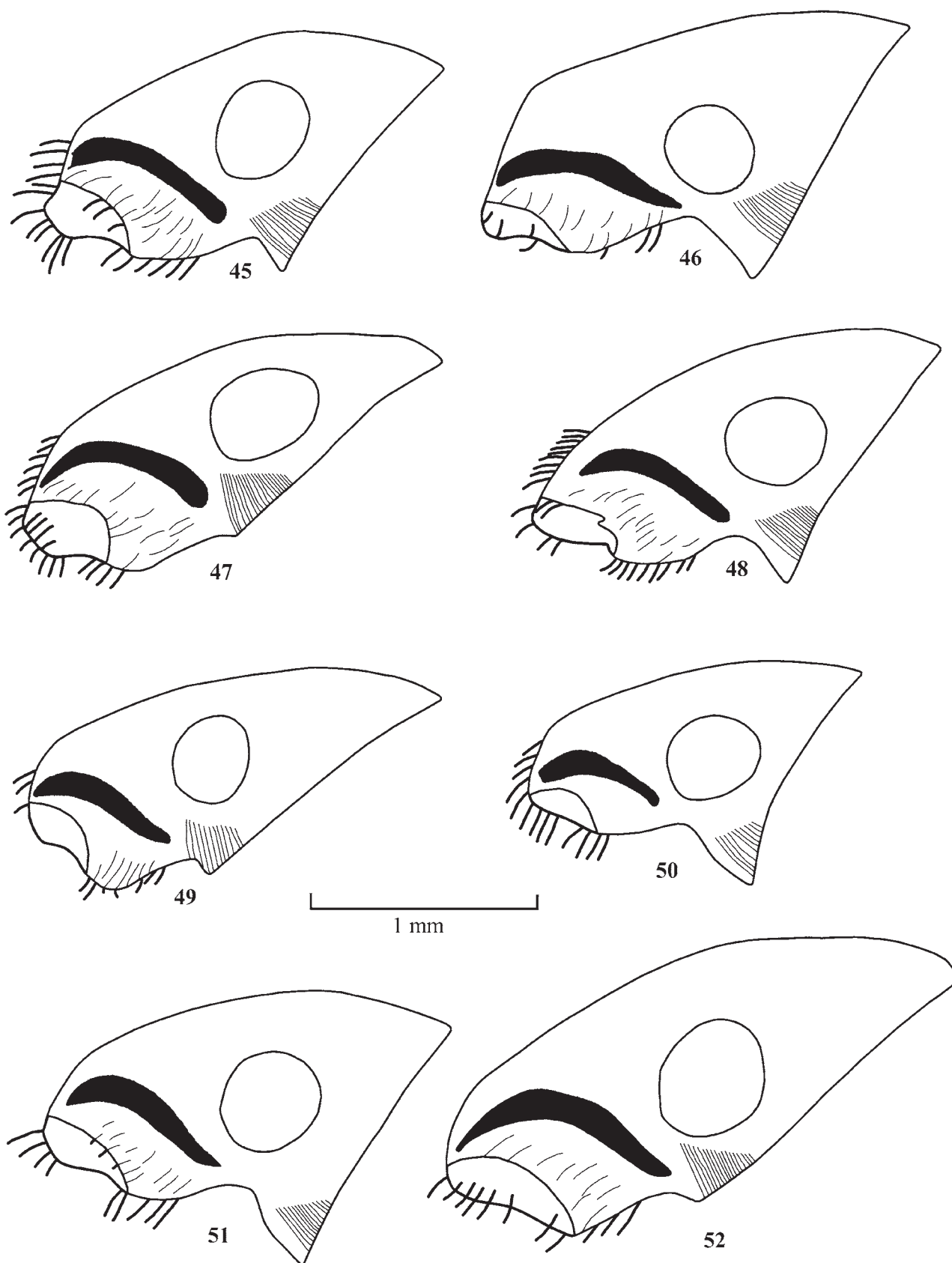
FIGURES 19–26. Head, dorsal view, of: *Indomias*. 19, *rajendrani* sp. nov.; 20, *maicykuttyae* sp. nov.; 21, *kriparami* sp. nov.; 22, *premlali* sp. nov.; 23, *dubeyi* sp. nov.; 24, *sharanagoudai* sp. nov.; 25, *mayarami* sp. nov.; *Sympiezomias*. 26, *subserratipes* sp. nov.



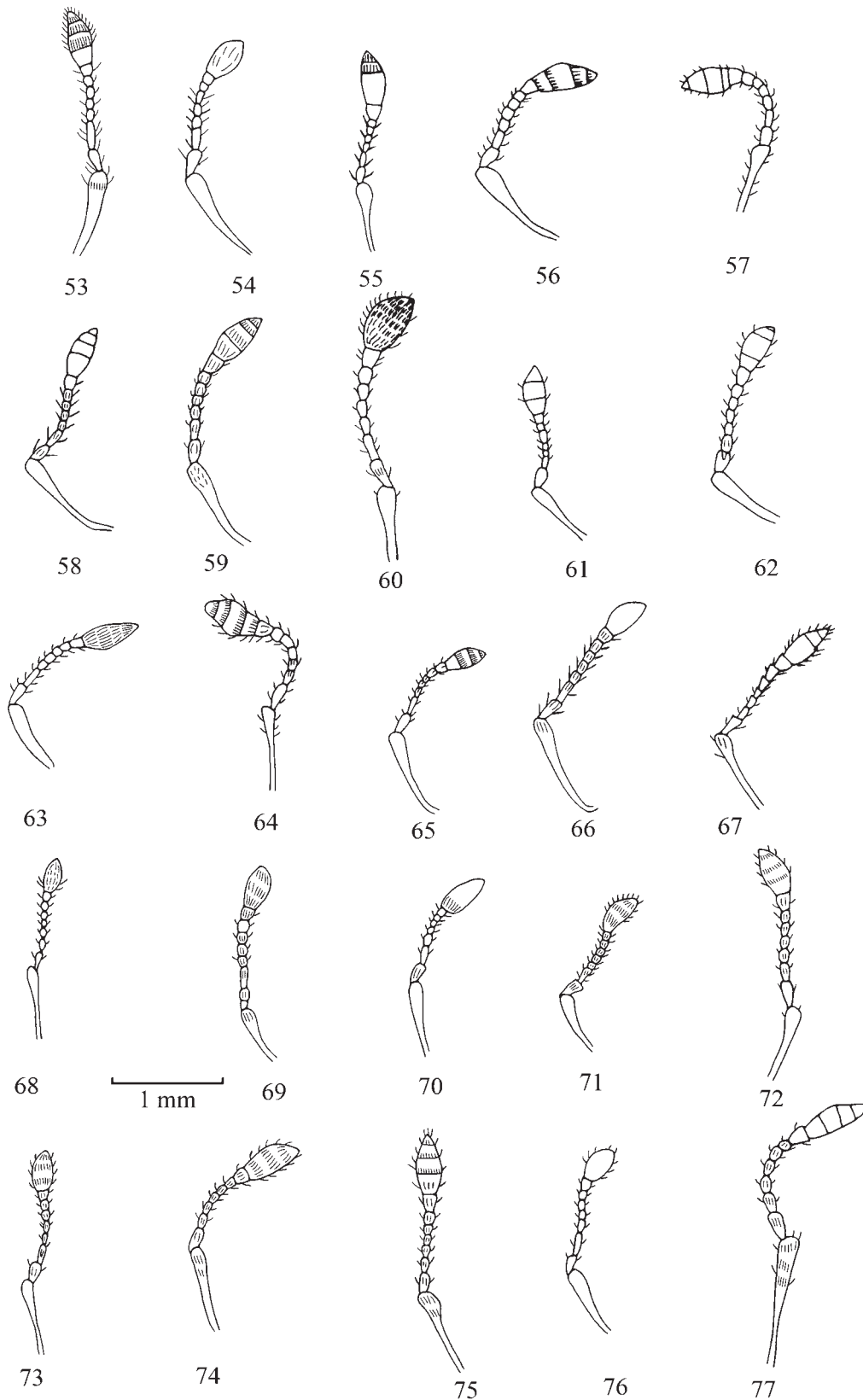
FIGURES 27–36. Head, lateral view, of: *Indomias*. **27**, *decipiens* (Marshall); **28**, *cretaceus* (Faust); **29**, *frater* (Marshall); **30**, *hispidus* (Marshall); **31**, *perroteti* (Boheman); **32**, *acutipennis* (Boheman); **33**, *lividus* (Marshall); **34**, *beesoni* (Marshall); **35**, *praeteritus* (Marshall); **36**, *anamalainus* (Marshall).



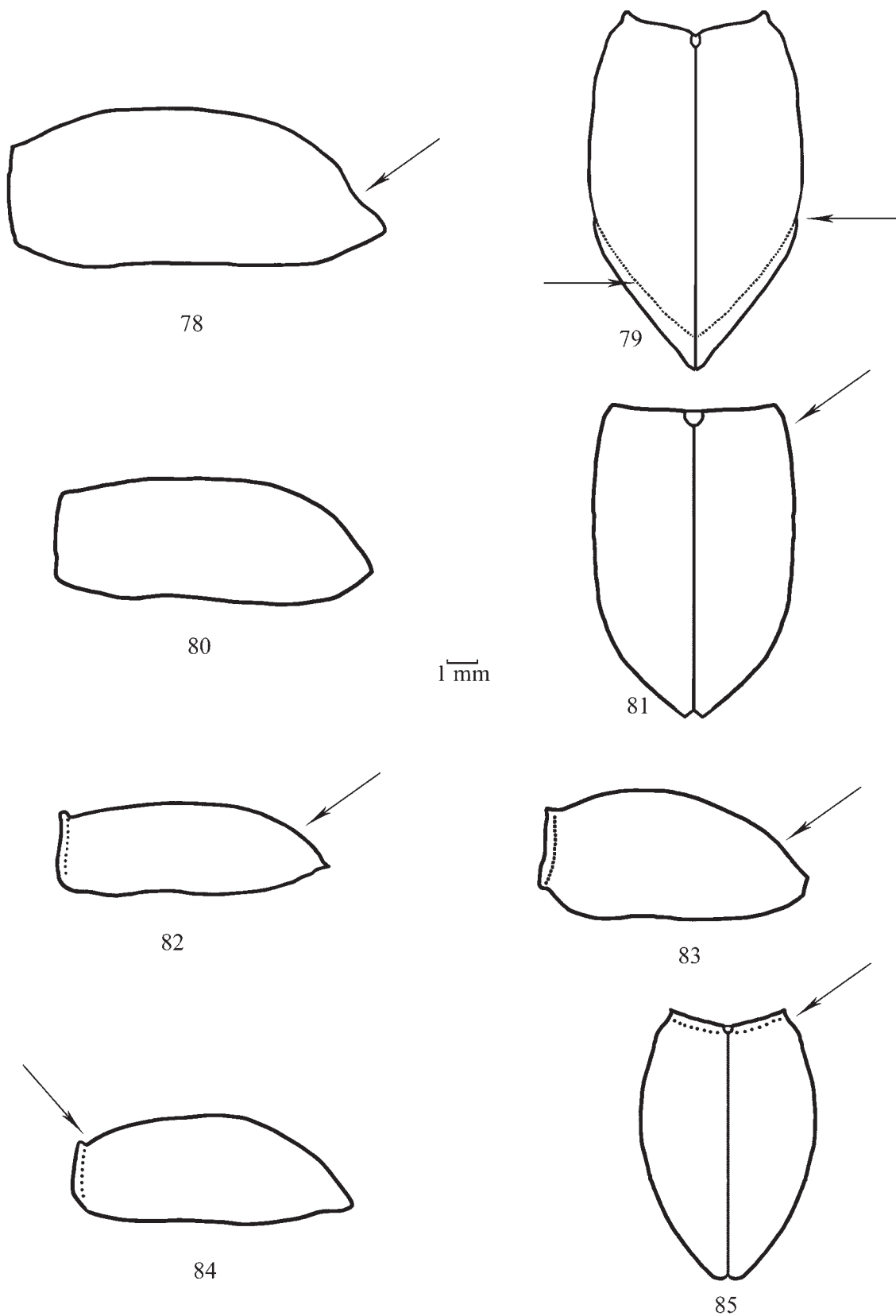
FIGURES 37–44. Head, lateral view, of: *Indomias*. 37, *rajendrani* sp. nov.; 38, *marshalli* sp. nov.; 39, *ramakrishnani* sp. nov.; 40, *prasinus* (Boheman); 41, *albizziae* sp. nov.; 42, *ajaykumari* sp. nov.; 43, *maicykuttyae* sp. nov.; 44, *menoni* sp. nov.



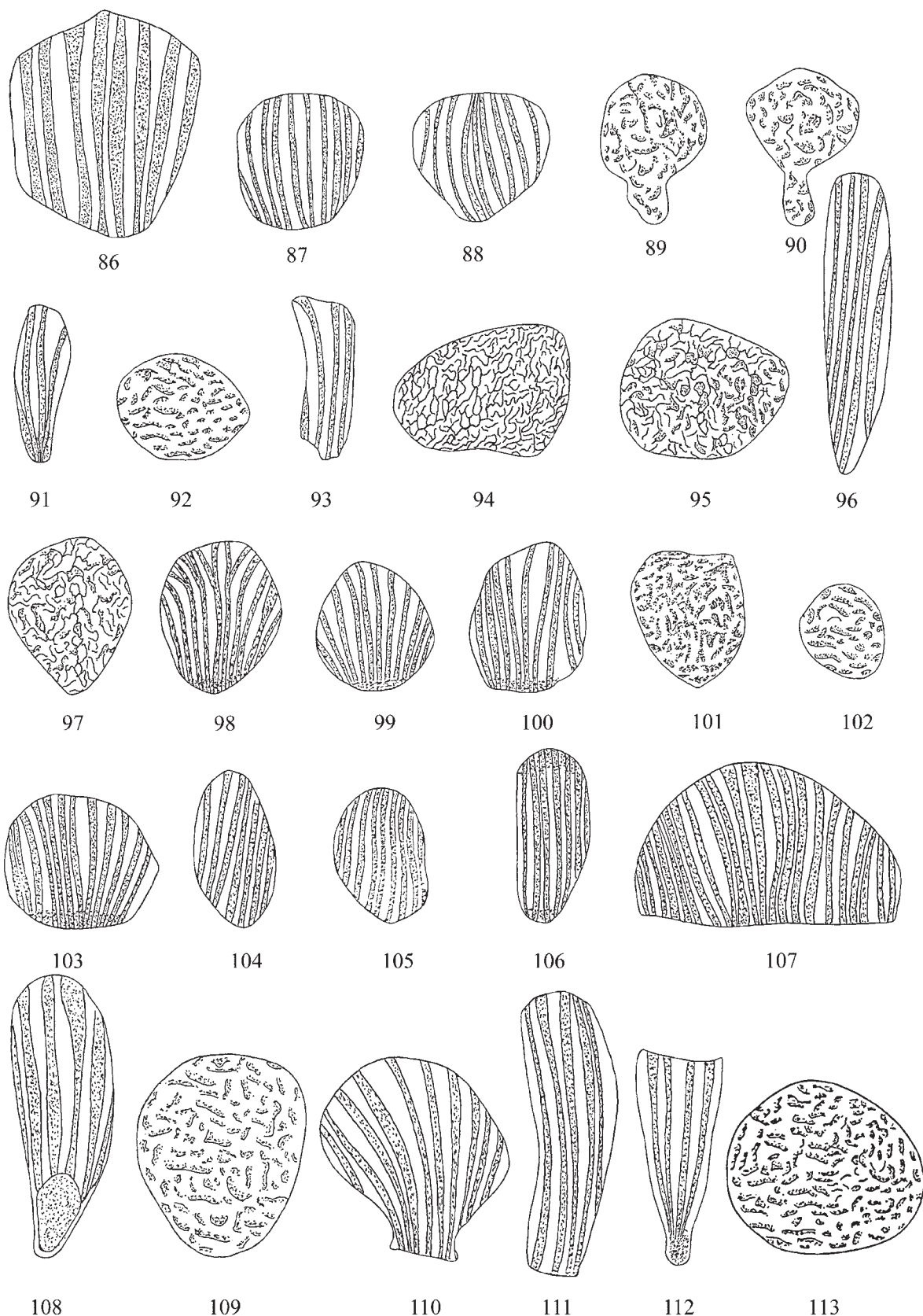
FIGURES 45–52. Head, lateral view, of: *Indomias*. 45, *kriparami* **sp. nov.**; *Sympiezomias*. 46, *subserratipes* **sp. nov.** *Indomias*. 47, *premlali* **sp. nov.**; 48, *mangalai* **sp. nov.**; 49, *sharanagoudai* **sp. nov.**; 50, *yercaudensis* **sp. nov.**; 51, *dubeyi* **sp. nov.**; 52, *mayarami* **sp. nov.**



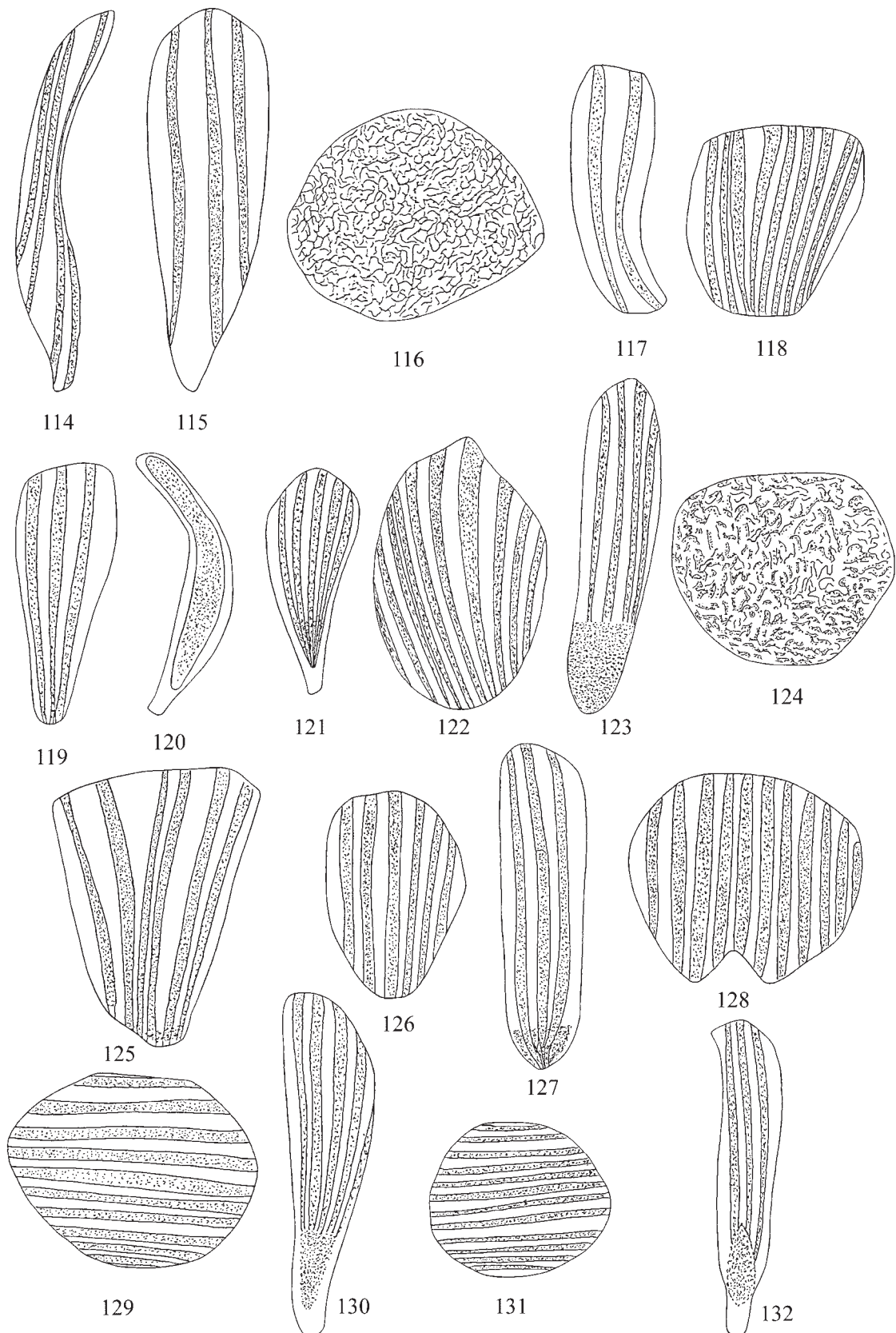
FIGURES 53–77. Antenna of: *Indomias*. 53, *cretaceus* (Faust); 54, *decipiens* (Marshall); 55, *frater* (Marshall); 56, *anamalainus* (Marshall); 57, *beesoni* (Marshall); 58, *hispidus* (Marshall); 59, *acutipennis* (Boheman); 60, *lividus* (Marshall); 61, *praeteritus* (Marshall); 62, *prasinus* (Boheman); 63, *ajaykumari* sp. nov.; 64, *albizziae* sp. nov.; 65, *marshalli* sp. nov.; 66, *rajendrani* sp. nov.; 67, *ramakrishnani* sp. nov.; 68, *maicykuttyae* sp. nov.; 69, *kriparami* sp. nov.; 70, *perroteti* (Boheman); 71, *premlali* sp. nov.; 72, *mayarami* sp. nov.; 73, *mangalai* sp. nov.; 74, *sharanagoudai* sp. nov.; 75, *dubeyi* sp. nov.; 76, *yercaudensis* sp. nov.; *Sympiezomias*. 77, *subserratipes* sp. nov.



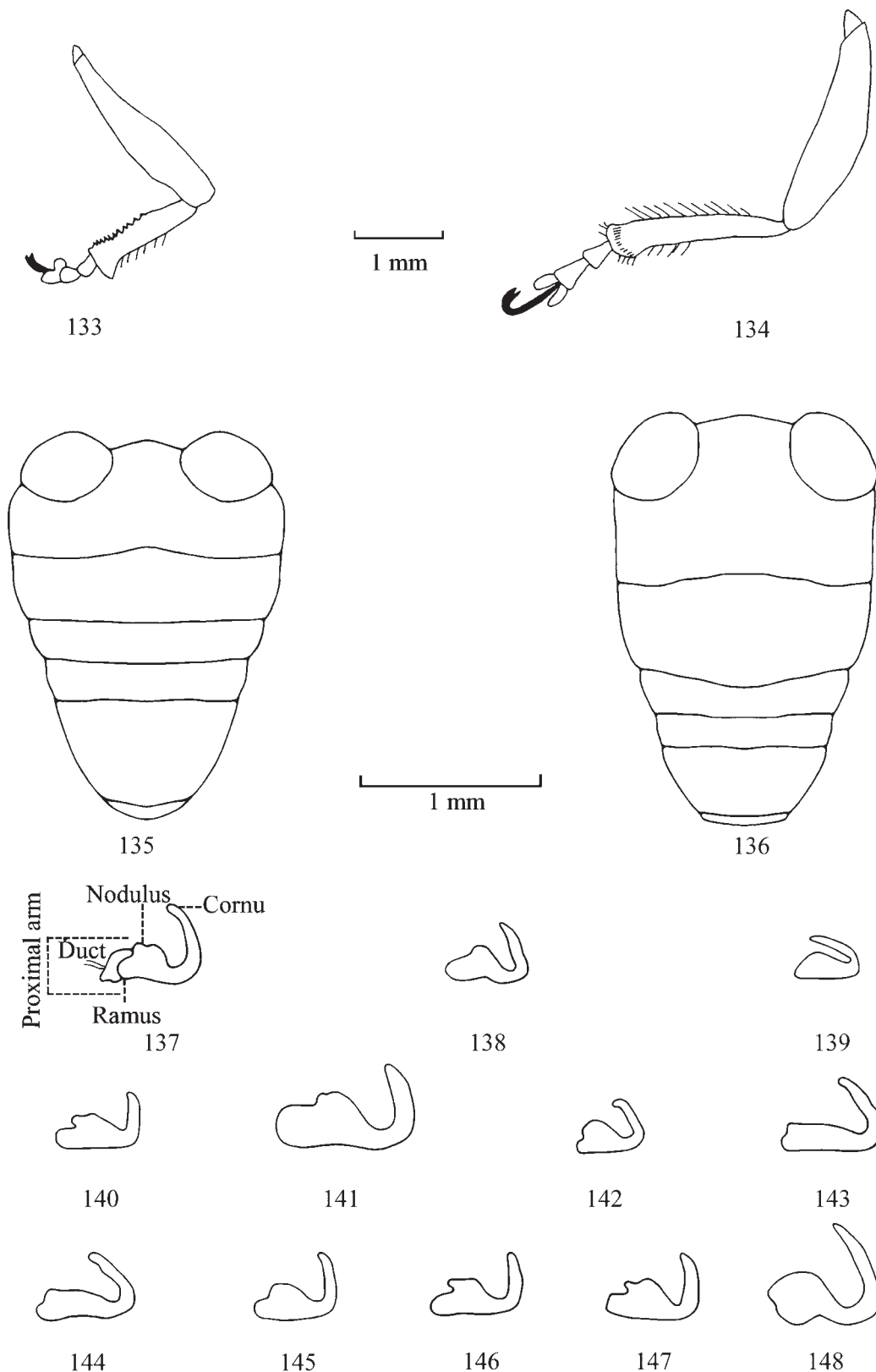
FIGURES 78–85. Elytra of *Indomias*. Dorsal and Lateral views, **78–79**, *acutipennis* (Boheman); **80–81**, *lividus* (Marshall); lateral views, **82**, *perroteti* (Boheman); **83**, *hispidus* (Marshall); dorsal and lateral views, **84–85**, *praeteritus* (Marshall).



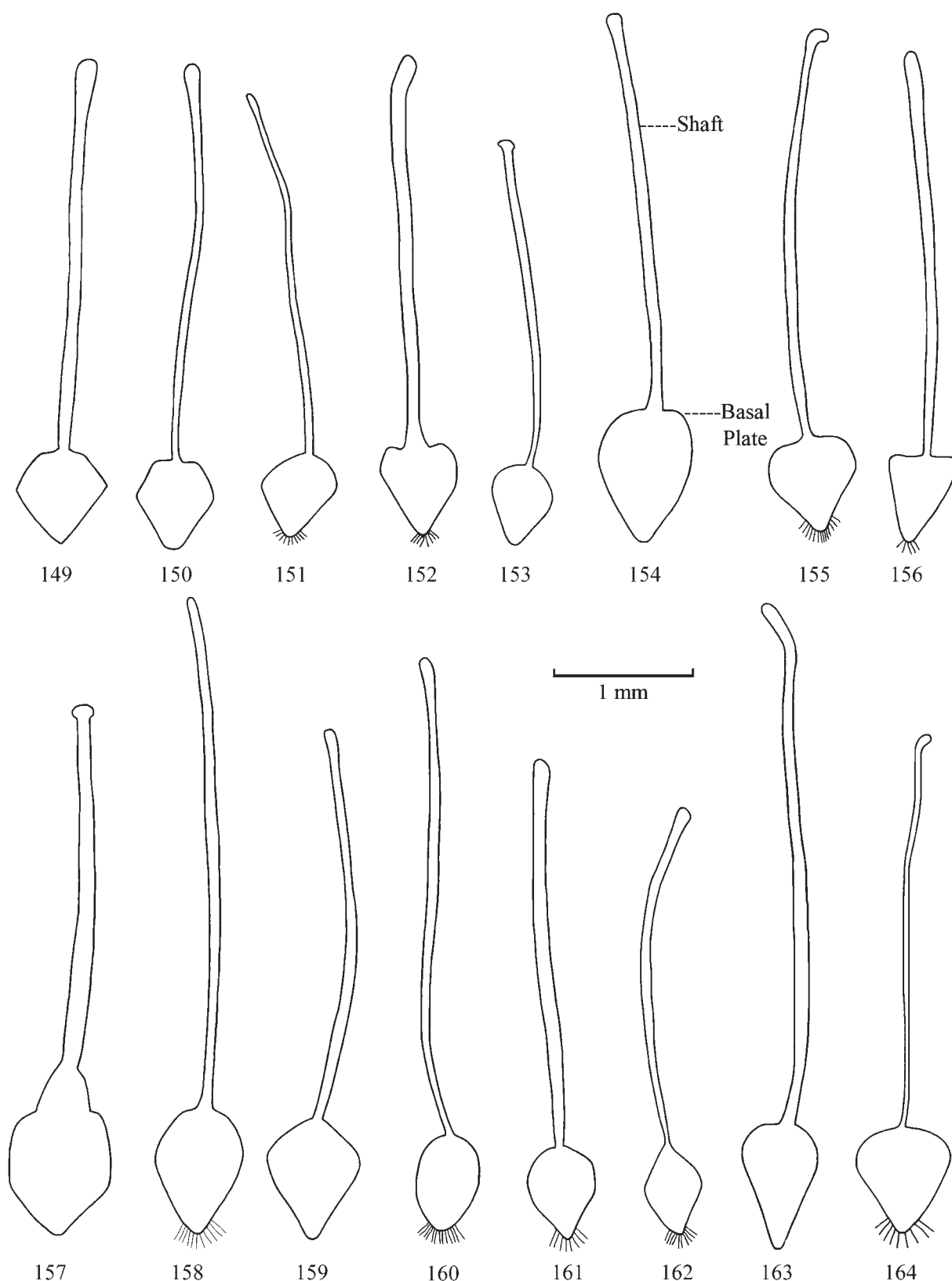
FIGURES 86–113. Elytral vestiture of: *Indomias*. 86, *cretaceus* (Faust); 87–88, *decipiens* (Marshall); 89–91, *frater* (Marshall); 92–93, *anamalainus* (Marshall); 94, *beesoni* (Marshall); 95–96, *hispidus* (Marshall); 97, *acutipennis* (Boheman); 98–99, *praeteritus* (Marshall); 100, *prasinus* (Boheman); 101, *albizziae* sp. nov.; 102–104, *lividus* (Marshall); 105–106, *yercaudensis* sp. nov.; 107–108, *ajaykumari* sp. nov.; 109, *menoni* sp. nov.; 110–111, *marshalli* sp. nov.; *Sympiezomias*. 112–113, *subserratis* sp. nov.



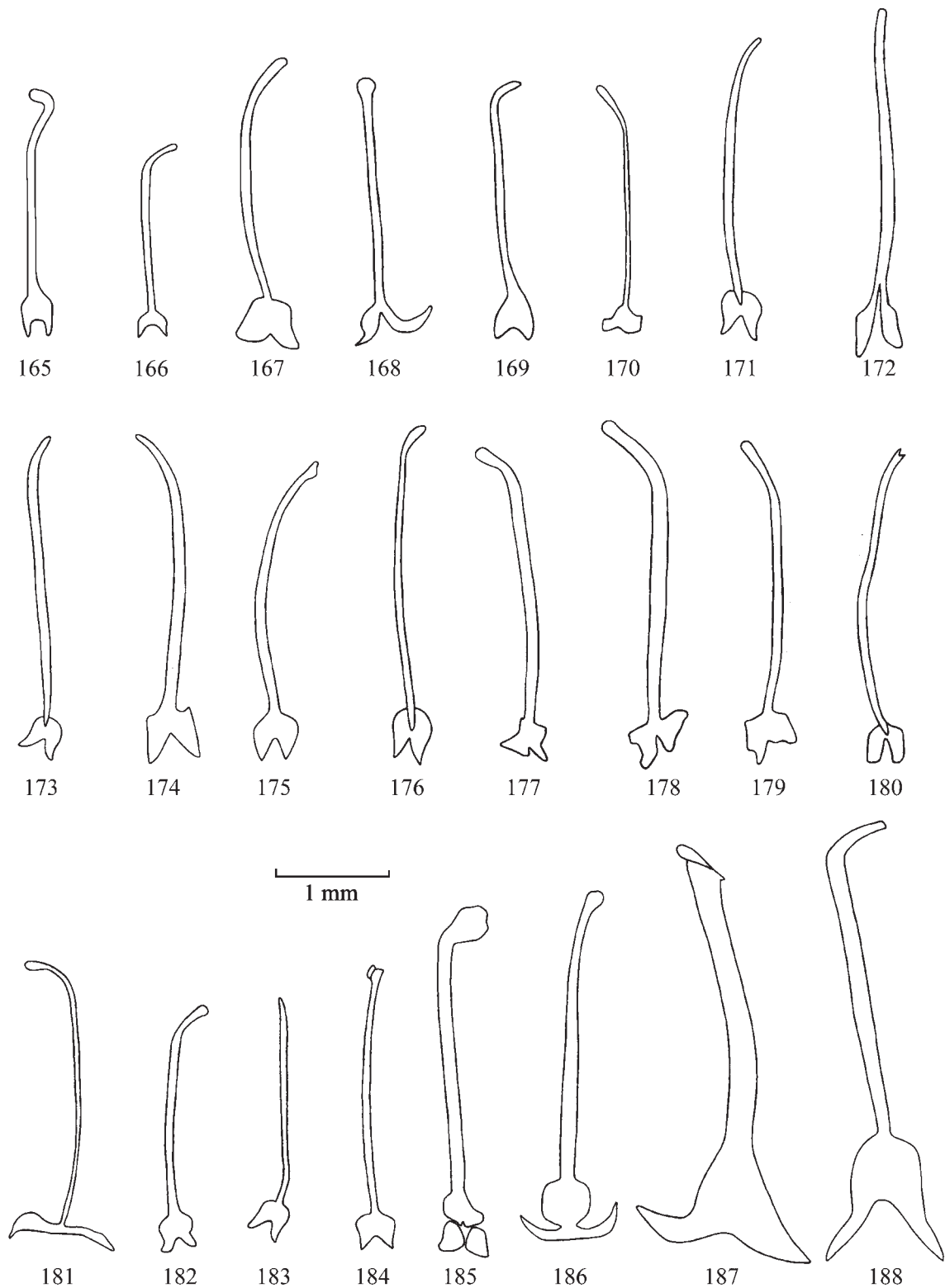
FIGURES 114–132. Elytral vestiture of: *Indomias*. 114–115, *rajendrani* sp. nov.; 116–117, *ramakrishnani* sp. nov.; 118–119, *maicykuttyae* sp. nov.; 120–121, *kriparami* sp. nov.; 122–123, *premlali* sp. nov.; 124–125, *mayarami* sp. nov.; 126–127, *mangalai* sp. nov.; 128, *sharanagoudai* sp. nov.; 129–130, *dubeyi* sp. nov.; 131–132, *perroteti* (Boheman).



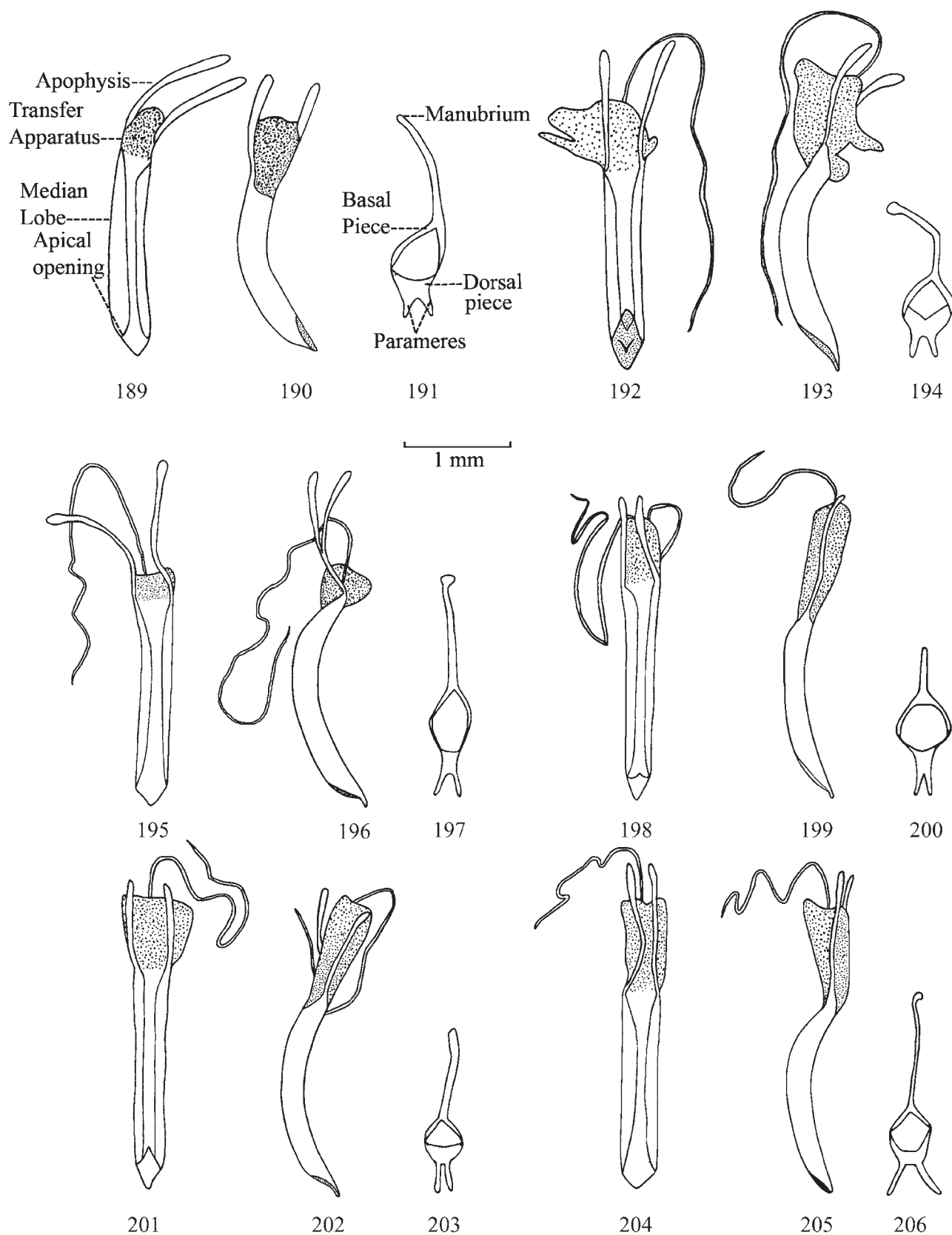
FIGURES 133–148. Hind leg, of: **133**, *Sympiezomias* Faust; **134**, *Indomias* Marshall. Venter, of: **135**, *Sympiezomias* Faust; **136**, *Indomias* Marshall. Female Genitalia, spermatheca of: *Indomias*. **137**, *cretaceus* (Faust); **138**, *decepiens* (Marshall); **139**, *frater* (Marshall); **140**, *acutipennis* (Boheman); **141**, *anamalainus* (Marshall); **142**, *praeteritus* (Marshall); **143**, *albizziae* **sp. nov.**; **144**, *menoni* **sp. nov.**; **145**, *marshalli* **sp. nov.**; **146**, *kriparami* **sp. nov.**; **147**, *mayarami* **sp. nov.**; *Geotragus*. **148**, *subfasciatus* Desbrochers



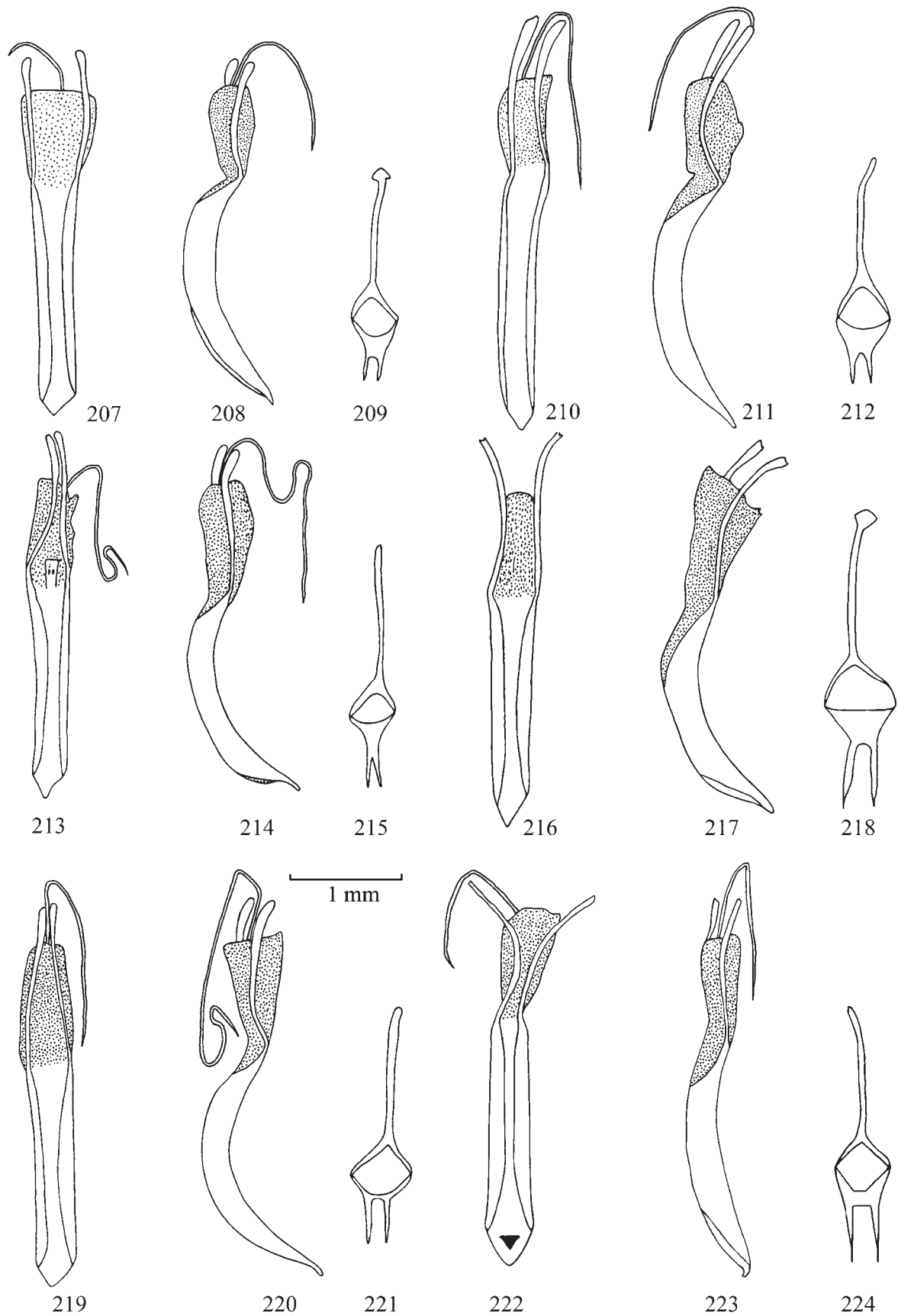
FIGURES 149–164. Spiculum ventrale of: *Indomias*. **149**, *marshalli* **sp. nov.**; **150**, *acutipennis* (Boheman); **151**, *frater* (Marshall); **152**, *hispidus* (Marshall); **153**, *decipiens* (Marshall); **154**, *cretaceus* (Faust); **155**, *rajendrani* **sp. nov.**; **156**, *mangalai* **sp. nov.**; *Geotragus*. **157**, *subfasciatus* Desbrochers; *Indomias*. **158**, *anamalainus* (Marshall); **159**, *perroteti* (Boheman); **160**, *albizziae* **sp. nov.**; **161**, *mayarami* **sp. nov.**; **162**, *praeteritus* (Marshall); **163**, *menoni* **sp. nov.**; **164**, *kriparami* **sp. nov.**



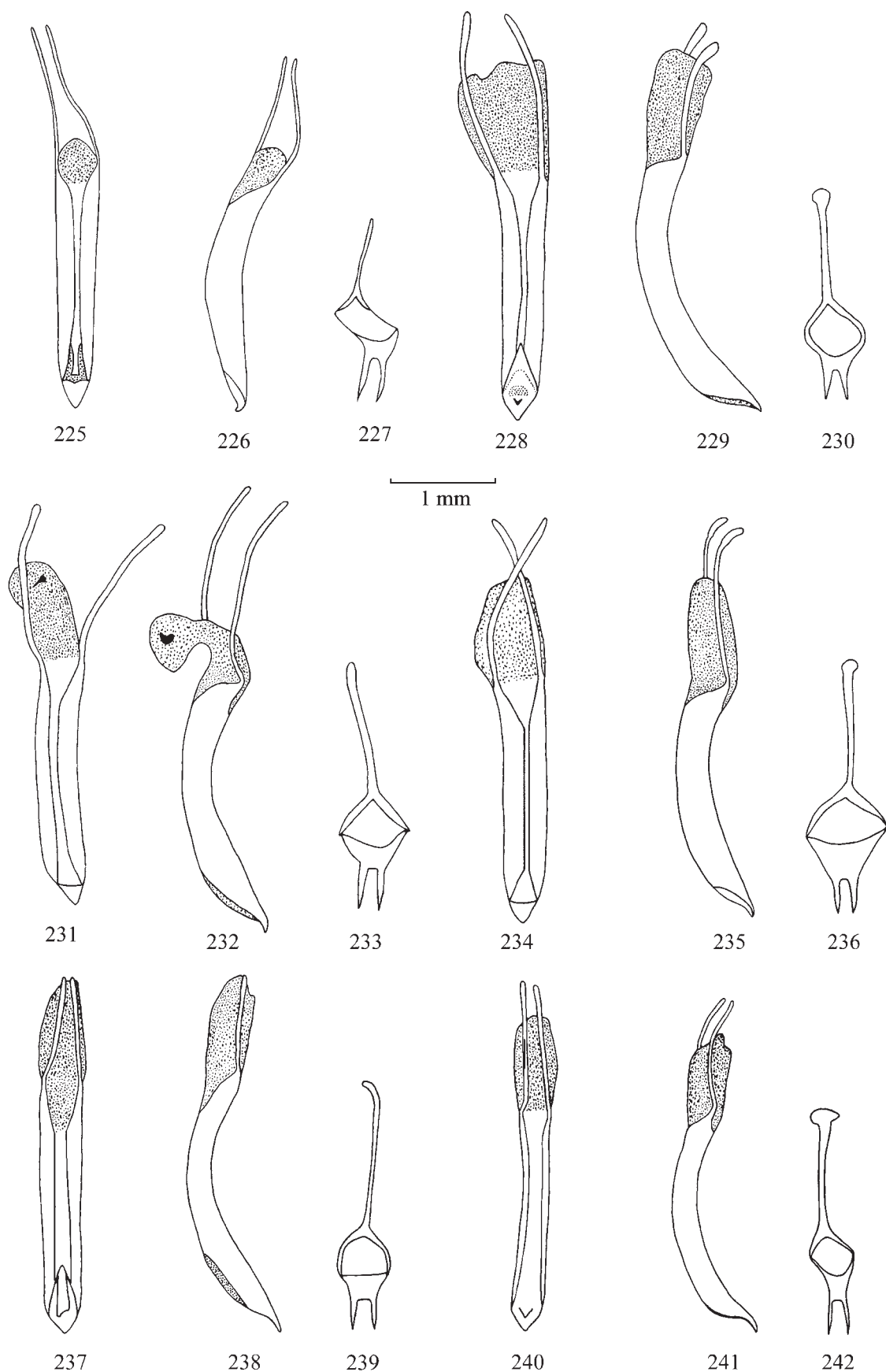
FIGURES 165–188. Spiculum gastrale of: *Indomias*. **165**, *cretaceus* (Faust); **166**, *decipiens* (Marshall); **167**, *frater* (Marshall); **168**, *beesoni* (Marshall); **169**, *hispidus* (Marshall); **170**, *praeteritus* (Marshall); **171**, *acutipennis* (Boheman); **172**, *anamalainus* (Marshall); **173**, *prasinus* (Boheman); **174**, *lividus* (Marshall); **175**, *perroteti* (Boheman); **176**, *ajaykumari* **sp. nov.**; **177**, *ramakrishnani* **sp. nov.**; **178**, *maicykuttyae* **sp. nov.**; **179**, *kriparami* **sp. nov.**; **180**, *premlali* **sp. nov.**; **181**, *mangalai* **sp. nov.**; **182**, *sharanagoudai* **sp. nov.**; **183**, *yercaudensis* **sp. nov.**; **184**, *dubeyi* **sp. nov.**; *Sympiezomias*. **185**, *suberratipes* **sp. nov.**; *Geotragus*. **186**, *himalayanus* Boheman; **187**, *subfasciatus* Desbrochers; *Burmotragus*. **188**, *similis* (Marshall).



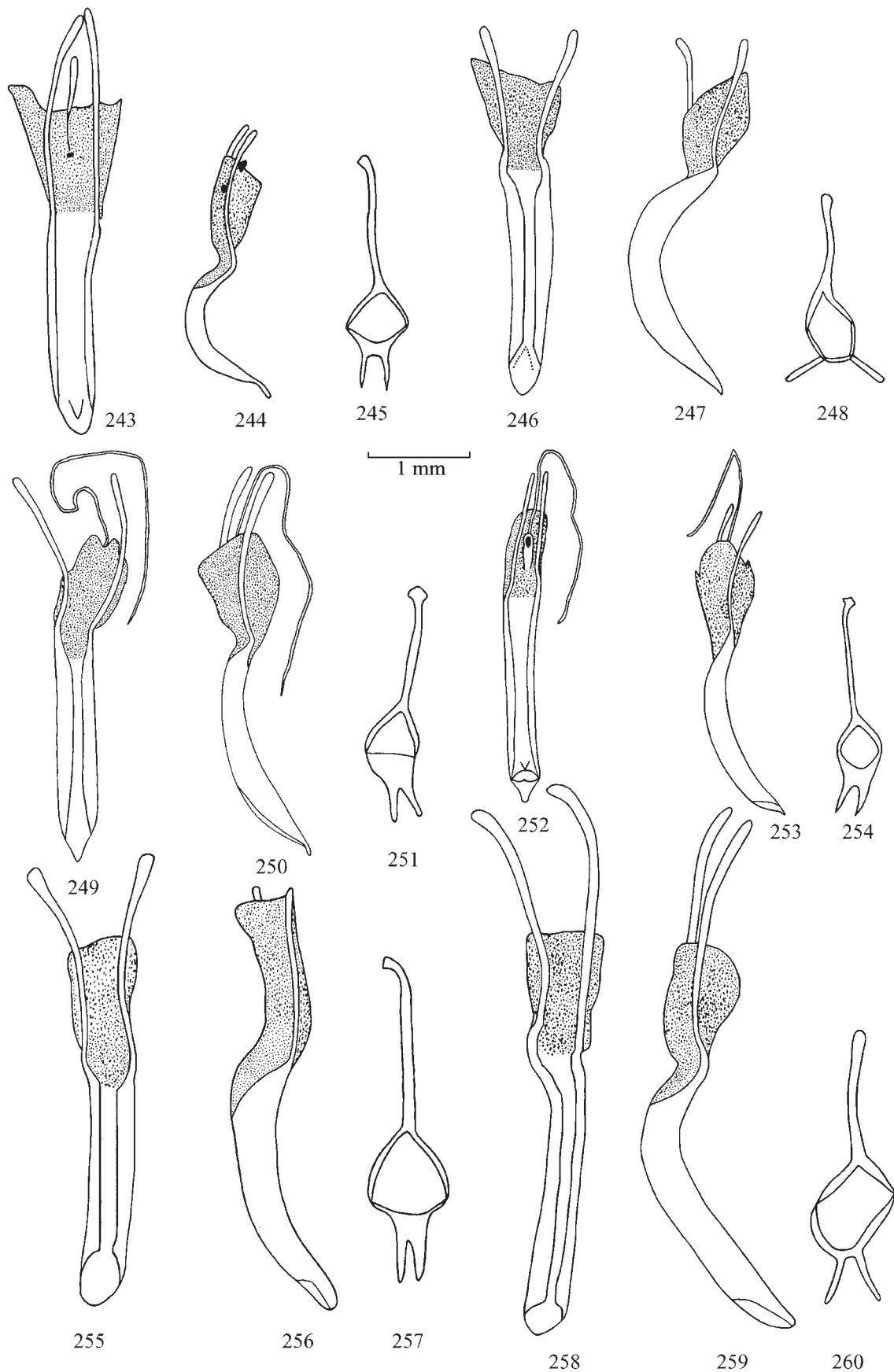
FIGURES 189–206. Male genitalia, adeagus- dorsal and lateral views, and tegmen, of: *Indomias*. **189–191**, *cretaceus* (Faust); **192–194**, *decipiens* (Marshall); **195–197**, *frater* (Marshall); **198–200**, *beesoni* (Marshall); **201–203**, *hispidus* (Marshall); **204–206**, *praeteritus* (Marshall).



FIGURES 207–224. Male genitalia, aedeagus- dorsal and lateral views, and tegmen, of: *Indomias*. 207–209, *acutipennis* (Boheman); 210–212, *anamalainus* (Marshall); 213–215, *prasinus* (Boheman); 216–218, *perroteti* (Boheman); 219–221, *lividus* (Marshall); 222–224, *ajaykumari* **sp. nov.**



FIGURES 225–242. Male genitalia, aedeagus- dorsal and lateral views, and tegmen of: *Indomias*. 225–227, *mangalai* sp. nov.; 228–230, *ramakrishnani* sp. nov.; 231–233, *maicykuttyae* sp. nov.; 234–236, *kriparami* sp. nov.; 237–239, *premlali* sp. nov.; 240–242, *sharanagoudai* sp. nov.



FIGURES 243–260. Male genitalia, aedeagus- dorsal and lateral views and tegmen, of: *Sympiezomias*. 243–245, *subserratipes* sp. nov.; *Geotragus*. 246–248, *himalayanus* Boheman; *Indomias*. 249–251, *dubeyi* sp. nov.; 252–254, *yercaudensis*, sp. nov.; *Burmotragus*. 255–257, *similis* (Marshall); *Geotragus*. 258–260, *subfasciatus* Desbrochers.

6. *Indomias cretaceus* (Faust)

(figs. 2, 28, 53, 86, 137, 154, 165, 189, 190 and 191)

Sympiezomias cretaceus Faust, 1897: 340; Marshall, 1916: 167; 1941: 350 [SMTD]

Description: **Colour** uniformly black, chalky white or pale green vestiture, without pollinose lateral stripe on elytra. **Head** convex, as long as rostrum, with scattered deep punctations; frons as broad as rostrum at anterior margin. **Rostrum** transverse, plain dorsally, 1.1x as broad as long, anterior margin 0.87x as broad as posterior margin; median furrow uniformly broad throughout, distinct up to anterior margin; lateral carinae distinct; scrobes broadest at middle, narrowed and pointed anteriorly, rounded posteriorly, space between scrobes as much as space between eyes. Eyes oval and dorsolateral (figs. 2 and 28). **Antennae** reddish brown; scape gradually broadened; funicle with first segment 1.1x as long as second, third and fourth equal bead like, fifth and sixth equal; club conical, entire surface densely hairy (fig. 53). Prothorax 1.1x as broad as long, its breadth at middle 1.1x as that of posterior margin; sides rounded throughout and strongly narrowed anteriorly; anterior margin 0.87x as that of posterior margin, truncate dorsally and oblique laterally, posterior margin subtruncate; upper surface with coarse, confluent punctations and interspaces granulate. Legs with hind tibial apex without any dense golden yellow hairs. **Elytra** ovate, basal margin strongly raised with acute external angle, humeral fold prominent, not impressed on declivity, with acute external basal angle; apices rounded in male, separately pointed but not truly mucronate in female; stria deeply punctatostriate; intervals slightly convex, with short, elongate scales; dorsal outline much convex, deepest near the middle and gradually sloping behind; ratio of length between basal margin to posterior declivity and from posterior declivity to apex 0.9:1; elytral vestiture with predominant reddish scales, ovate with 7–8 ridges (fig. 86). Venter with elongate scales on the first two ventrites, short and flattened, as compared to *I. decipiens*.

Male genitalia: Aedeagus with median lobe, short, broad, broadest at junction with apophyses, apex pointed, length: breadth ratio 5.8:1, apophyses short, only 0.5x as long as median lobe, apices broadly rounded (figs. 189–190). Tegmen with dorsal piece 3x as broad as the basal piece; parameres very short, with pointed apices; manubrium moderately long, 0.57x as long as the median lobe, it is bent throughout its length, apex bluntly rounded (fig. 191). Spiculum gastrale with shaft as long as median lobe, slender at middle, broad at either ends, apex bent acutely and rectangular; basal prongs subequal with rounded apices (fig. 165).

Female genitalia: Spermatheca with proximal arm swollen, 3x as broad and 0.64x as long as the distal arm, angle between the arms obtuse; nodulus globular, ramus cuboidal, 3.4x as broad as nodulus; cornu narrowing towards smoothly rounded apex (fig. 137). Spiculum ventrale with shaft moderately long, uniformly thick, its apex bluntly rounded; basal plate 0.33x as long as shaft spatulate, longer than broad (1:0.7), with basal half rectangular, apical half subconical, apex blunt with tuft of hairs (fig. 154).

Length: male, 6–6.5 mm; female, 8.5–9.5 mm. **Breadth:** male, 2.5–3.0 mm; female, 3.25–3.60 mm.

Specimens examined: 2 male, INDIA: Tamil Nadu: Gudalur: Nilgiri Hills: 3500 ft, 1949, without collector's name; 1 female, Karnataka: Bangalore: 26.VIII.1913, Coll. T.B. F., on mulberry; Nilgiri Hills, without date and collector's name; 1 male, Coimbatore: Bailur forest, 23–28.XI.1913, Coll. Ramakrishna; Nilgiri Hills: Adderley: 3000 ft, 26.IV.1915, Coll. G.R. Dutt; Karnataka: Bangalore, 24.VI.1908, Coll. T.V.R.; Karnataka: Bangalore: VI.1906, Coll. T.V.R.; Kerala: Malabar: Dhony forests: 26.V.1922, Coll. Ramakrishna; 6 specimens, Karnataka: Bangalore: PDBC, 3.VII.1998, Coll. J. Poorani, on redgram; 6 specimens, Karnataka: Bangalore: PDBC, 25.V.1998, Coll. J. Poorani, on rose; Tamil Nadu: Thadiyankudisai, 24.VII.1999, Coll. S. Suresh, on coffee; 3 specimens, Karnataka: Bangalore: PDBC, 25.V.1998, Coll. J. Poorani, on radish.

Distribution: India: Karnataka: Tamil Nadu

Associated habitats: Coffee, radish, rose, redgram, and mulberry.

Taxonomic note: This species exhibits sexual dimorphism in size; females are more robust than males. Marshall (1916) stated that apical margin of prothorax is vertically truncate laterally, but it has been found that it is obliquely truncate.

Economic importance: It is reported to be a vector of sandal spike disease in sandal (Hart and Rengaswamy, 1926; Anonymous, 1932, 1933). It was reported feeding on coffee (Ayyar, 1922), mulberry (Wadhi and Batra, 1964) and on *Rawolfia seperpentina* plantations (Pratap Singh, 1964).

TABLE 2. Sexual dimorphic characters in *Indomias*.

Character	Description	Diagnosis
1. Pronotum	(i) Slightly longer than broad (1.0:0.9)	Male <i>I. acutipennis</i>
	(ii) Broader than long (1.1:1.0)	Female <i>I. acutipennis</i>
	(iii) As long as broad	Male <i>I. decipiens</i>
	(iv) Slightly broader than long (1:0.9)	Female <i>I. decipiens</i>
	(v) Sides more rounded and narrower in front	Male <i>I. lividus</i>
2. Elytra		
a. General shape	(i) Narrowly ovate	Male <i>I. beesoni</i> , Male <i>I. prasinus</i>
	(ii) Slightly broader	Female <i>I. beesoni</i>
	(iii) Broader	Female <i>I. prasinus</i>
b. Development of humeral fold	(i) Practically absent	Male <i>I. praeteritus</i>
	(ii) Developed but does not project beyond lateral outline of elytra	Female <i>I. praeteritus</i>
	(iii) Humeral fold forming a distinctly projecting angle	Female <i>I. prasinus</i>
	(iv) Humeral fold distinct but does not form a projecting angle	Male <i>I. prasinus</i>
c. Apex of elytra	(i) Rounded	Male <i>I. cretaceus</i>
	(ii) Separately pointed but not truly mucronate	Female <i>I. cretaceus</i>
	(iii) Almost rounded	Male <i>I. frater</i>
	(iv) Slightly mucronate	Female <i>I. frater</i>
	(v) With short, distinct apical mucros	Female <i>I. anamalainus</i>
	(vi) With short, distinct apical mucros	Female <i>I. decipiens</i>
	(vii) Not mucronate or rounded	Male <i>I. lividus</i>
	(viii) Scarcely mucronate	Female <i>I. lividus</i>

7. *Indomias decipiens* (Marshall)

(figs. 1, 27, 54, 87, 88, 138, 153, 166, 192, 193 and 194)

Sympiezomias decipiens Marshall, 1916: 167; 1941: 350 [BMNH]

Description: **Colour** black, with dull brown to sand grey vestiture. **Head** 1.1x as long as rostrum, upper surface convex, with scattered deep punctations; frons 2x as broad as length of eye. **Rostrum** plain dorsally, as long as broad, anterior margin 0.83x as broad as posterior margin; median furrow club shaped, narrowed posteriorly; lateral carinae distinct; sides straight and narrowing towards the anterior margin; scrobes uniformly broad, oriented in a semicircular fashion up to the anterior margin of rostrum, then becoming parallel towards the eyes, space between scrobes 1.1x as that between the eyes. Eyes dorsolateral, moderately convex and circular, space between the eyes as much as the breadth of rostrum at posterior margin (figs. 1 and 27). **Antennae** dark brown; scape gradually broadened; funicle with first segment 1.1x as long as second, third and fourth subequal, fifth rounded; club broad, conical (fig. 54). Prothorax as long as broad in male, slightly broader than long in female (1:0.9), its breadth at middle 1.1x as that of posterior margin; sides rounded anteriorly but constricted behind, gradually narrowing towards the anterior margin which is only 0.7x as broad as breadth at middle; anterior margin 0.77x as broad as posterior margin, truncate dorsally and oblique laterally, posterior margin subtruncate; upper surface with coarse, confluent punctations, interspaces granulate. Legs with hind tibial apex without any dense, golden yellow hairs. **Elytra** narrowly ovate in male, broadly ovate in female, basal margin strongly raised, its external angle acute, with humeral fold slightly prominent, posterior declivity not impressed; apices in female each with a distinct, short mucro, but in males

rounded; stria deeply punctate; upper surface less convex, almost flat, deepest near the base, then gradually sloping backwards and becoming abruptly steeper behind; ratio of length in elytra from basal margin to posterior declivity and from the posterior declivity to the apex 4:1; intervals less convex; second and third intervals 2x as broad as the first and fifth; elytral vestiture with predominant scales ovate to conical, flat, reddish brown, with 8–9 broken ridges (figs. 87–88). Venter with setae on the first two ventrites longer and finer when compared to those of *I. cretaceus*.

Male genitalia: Aedeagus with median lobe slender, slightly arcuate in profile, broadest at junction with apophyses, length: breadth 9:1; transfer apparatus massive, transparent, less sclerotized; apophyses 0.44x as long as median lobe; apex of median lobe bluntly rounded (figs. 192–193). Tegmen with dorsal piece 5x as broad as basal piece; parameres short, broad, apices smoothly rounded; manubrium short, uniformly thick, 0.33x as long as median lobe and bent towards apex in triangular fashion at 45° angle, with its apex, swollen and rounded (fig. 194). Spiculum gastrale with shaft moderately long, 0.66x as long as the median lobe, apex bent, narrowed and blunt (fig. 166).

Female genitalia: Spermatheca with proximal and distal arms subequal, proximal arm swollen, 2.5x as broad as distal arm; angle between proximal and distal arms acute; nodulus circular and smoothly rounded; ramus at least 3x as nodulus, rectangular; cornu slightly bent inwards at apex and pointed (fig. 138). Spiculum ventrale with shaft broader at middle, narrowed at base, apex broadened and circular; basal plate laminate, longer than broad (3:2), apex bluntly rounded and bare; ratio of length of basal plate to that of shaft 1:4 (fig. 153).

Length: male, 7.35 mm; female, 7.55 mm. **Breadth:** male, 2.3 mm; female, 2.7 mm.

Specimens examined: 1 male, without locality, date and collector's name; 1 female: INDIA: Karnataka: Bangalore, 26.VIII.1913, Coll. T.B.F., on Mulberry; 1 female (paratype) Tamil Nadu: Nilgiris, without date, Coll. H.L. Andrewes; 1 male: Coimbatore, 18.VIII.1912, Coll. T.V.R.; Kerala: Pampadumpara, 22.I.1994, Coll. P.M. Mathew on Cardamom.

Distribution: India: Karnataka: Bangalore; Kerala: Pampadumpara; Tamil Nadu: Coimbatore; Nilgiri Hills.

Associated habitats: Mulberry, cardamom.

Taxonomic note: This species exhibits sexual dimorphism. Males are shorter than females. In females, prothorax slightly broader than long (1:0.9) compared to males, where prothorax as long as broad; moreover apices of elytra in females with distinct, short mucro, while rounded in males.

Economic importance: Reported to be causing damage to young cinchona trees (Marshall, 1916).

8. *Indomias dubeyi* Ramamurthy sp. nov.

(figs. 23, 51, 75, 129, 130, 184, 249, 250 and 251)

Diagnosis: This species resembles *I. kraatzii* (Heller) and is distinguished by the following characters: Rostrum 1.1x as broad as long, median furrow broad and almost fused with anterior margin but narrowed and pointed posteriorly. Antennae with club distinct i.e., segments narrowing and telescoped from base to apex. Prothorax 1.01x as broad as long. Male genitalia with apex of manubrium enlarged, conical, notched; spiculum gastrale with apex of shaft truncate and horn like. Length: breadth ratio of general body size either equal to or more than 3:1.

Description: **Colour** black with pale or dull green vestiture. **Head** as long as rostrum, upper surface moderately convex, with deep, scattered punctations hidden behind vestiture. **Rostrum** shallowly impressed, 1.1x as broad as long, anterior margin only 0.75x as broad as posterior margin; median furrow broad and almost fused with anterior margin, but narrowed and pointed posteriorly; lateral carinae complete and seen throughout the length of rostrum, extending beyond anterior margin of eyes at least up to 0.25x as the length of eye; scrobes broader and broadly rounded anteriorly but much narrowed, sharply pointed and converging posteriorly. Eyes dorsal, moderately convex and cylindrical (figs. 23 and 51). **Antennae** dark brown; scape abruptly clavate; funicle with first segment 1.25x as long as the second, third and fourth equal, fifth and sixth

subequal; club distinct due to the segments narrowing, and getting telescoped from base to apex (fig. 75). Prothorax 1.01x as broad as long, its breadth at middle 1.1x as broad as posterior margin, sides rounded; anterior margin only 0.87x as broad as posterior margin, truncate dorsally and acute laterally, posterior margin truncate; sides rounded; upper surface shallowly punctate, interspaces granulate. Legs with hind tibial apex having well developed, dense, golden yellow, short hairs. **Elytra** with basal margin strongly raised, its external angle acute, humeral fold present but not projecting; apices rounded; stria deeply punctate; intervals broad, convex; elytral vestiture with predominant scales subovate, reddish brown, with 8–10 ridges (fig. 129), less predominant elongate, brown, with a short pedicel, inner core opaque, granulated, with 4–5 ridges (fig. 130).

Male genitalia: Aedeagus with median lobe slender, broadest at junction with apophyses, length: breadth ratio 6:1, membranous at middle; in profile arcuate at base, its apex blunt, apophyses 0.66x as long as median lobe (figs. 249–250). Tegmen with dorsal piece 5x as broad as basal piece; parameres long, papillate, their apices rounded; manubrium 0.5x as long as median lobe, uniformly thick, with an enlarged, notched, conical apex (fig. 251). Spiculum gastrale with shaft as long as median lobe, uniformly thick, its apex truncate, horn like; basal prongs equal, their apices truncate and pointed (fig. 184).

Length: male, 9.03 mm; **Breadth:** male, 2.85 mm.

Holotype: 1 male, INDIA: Kerala: Malabar: Dhony forests, 26, V.1922, Coll. Ramakrishna (NPC).

Distribution: India: Kerala.

Etymology: The name *I. dubeyi* **sp. nov.** is derived from and in the honour of Dr. O. P. Dubey, Ex-Assistant Director General, Plant Protection, ICAR, New Delhi, particularly for his sincere interest and encouragement for taxonomic studies on insects.

9. *Indomias frater* (Marshall)

(figs. 8, 29, 55, 89, 90, 91, 139, 151, 167, 195, 196 and 197)

Sympiezomias frater Marshall, 1916: 164; 1941: 350 [BMNH]

Description: **Colour** black, covered with dense, uniform, metallic green or bluish green vestiture, inflexed margins of prothorax and elytra with yellow powdery patches; elytra with an elongate yellow patch at base of intervals four and five, another similar smaller patch at apex of these intervals. **Head** as long as rostrum, upper surface moderately convex, with fine, scattered punctations and without any median stria. **Rostrum** plain dorsally, tranverse, 1.2x as broad as long, breadth at anterior margin only 0.64x as of posterior margin; median furrow very short, broad and pushed towards anterior margin; lateral carinae distinct; sides straight, narrowing gradually towards anterior margin; scrobes uniformly broad, narrow, much longer, almost 0.9x as long as rostrum, extending from anterior margin of rostrum to the anterior margin of prothorax, rounded anteriorly and pointed posteriorly towards eyes, space between scrobes 0.78x as much as the space between eyes. Eyes entirely lateral, broadly oval, moderately convex and prominent, 0.5x as long as rostrum; space between eyes equals to breadth of rostrum at its posterior margin (figs. 8 and 29). **Antennae** dark brown; scape abruptly clavate; funicle with first and second segments equal, third and fourth equal, fifth and sixth subequal; club conical, with only last two segments hairy (fig. 55). Prothorax as long as broad, breadth at middle 1.1x as broad as the posterior margin; sides rounded throughout, broadest at about middle, then gradually narrowing towards anterior margin; lateral margins inflexed; anterior margin only 0.67x as the breadth at middle and 0.72x as broad as the posterior margin, truncate dorsally, acute laterally, posterior margin truncate, basal lobe emarginate; upper surface with shallow, confluent punctations, interspaces coriaceous, without any median stria. Legs with hind tibial apex without any dense, golden yellow hairs. **Elytra** with basal margin strongly raised, its external angle perpendicular or acute, humeral fold prominent and projecting; longitudinal curvature moderately convex; apices almost rounded in male and slightly mucronate in female; stria finely punctatostriate; intervals even and plain, interval three not higher than two on declivity, bears no impression, elongate scales small but distinct; elytral vestiture with predominant scales circular to oval, flat, reddish orange to reddish blue, their inner areas granulated, and base with a pedicel (figs. 89–90), less predominant

elongate, club shaped, with a rounded pedicel at base, with 3–4 ridges (fig. 91).

Male genitalia: Aedeagus with median lobe slender, broadest at middle, length: breadth ratio 8:1, in profile median lobe scarcely arcuate, its apex narrow, bluntly pointed; transfer apparatus less sclerotized, ejaculatory duct quite long (figs. 195–196). Tegmen with dorsal piece 7x as broad as basal piece, dorsal piece very long, 0.44x as long as the manubrium; parameres long, slender, their apices rounded; manubrium 0.5x as long as the median lobe, and as long as tegmen its apex broadened and spatulate (fig. 197). Spiculum gastrale elongate, as long as median lobe, uniformly thick, its apex blunt; basal prongs subequal, triangular and pointed (fig. 167).

Female genitalia: Spermatheca with proximal arm triangular, relatively much swollen, 4x as broad as the distal arm, as long as cornu; angle between two arms steeply acute, distal arm almost parallel to the proximal, without any distinction between nodulus and ramus; cornu long, bent, close towards proximal arm (fig. 139). Spiculum ventrale with shaft slender, uniformly thick, its apex blunt; basal plate spatulate, 1.19x as long as broad, 0.25x as long as the shaft, apical half triangular, with a rounded apex and with 4–5 short stout hairs (fig. 151).

Length: male, 5.00–8.00 mm; female, 6.80–7.40 mm. **Breadth:** male, 2.00–2.66 mm; female, 2.45–2.80 mm.

Specimens examined: 2 male, 3 female, INDIA: Tamil Nadu: Yercaud: Shevaroy: 4500 ft, 23. IV–4.V.1913, Coll. Fletcher, on coffee; Karnataka: Coorg: Pollibetta, IX. 1903, without collector's name; 2 specimens, 1 paratype, Tamil Nadu: Shevaroy: 4000 ft, 24.VIII.1907, Coll. C.W.M., on coffee; Paiyur: Coll. G. Lund, without date; 5 specimens, Tamil Nadu: Yercaud, Shevaroy, 4500 ft, 21.IV to 4.V.1913, Coll. Fletcher.

Associated habitat: Coffee.

Distribution: India: Karnataka: Coorg; Tamil Nadu: Nilgiri Hills; Salem; Yercaud.

10. *Indomias hispidus* (Marshall)

(figs. 3, 30, 58, 95, 96, 152, 169, 201, 202 and 203)

Sympiezomias hispidus Marshall, 1916: 166; 1941: 350 [ZSI]

Description: **Colour** black, intermingled with black and grey vestiture, the latter predominant laterally and often having a coppery reflection. **Head** longer than rostrum (1.1:1), upper surface fine, even, with scattered, coarse punctations, a short, dumbbell shaped, median furrow is seen on vertex. **Rostrum** shallowly impressed at middle dorsally, broader than long (1:0.8), anterior margin only 0.62x as broad as posterior margin; median furrow moderately long, very deep, broader towards anterior margin, then getting narrowed, and thereafter slightly broadened before reaching the middle of eyes; lateral carinae distinct; scrobes broader, oriented parallel anteriorly, but narrowed and sharply pointed posteriorly, 0.75x as long as rostrum, space between scrobes 0.83x as broad as that between eyes. Eyes dorsal, convex, 2x as long as broad (figs. 3 and 30). **Antennae** brown; scape more slender, glabrous; funicle with first segment 1.25x as long as second, broader, third to sixth equal and bead like, seventh broadest; club conical, much broader than funicle segments (fig. 58). Prothorax 1.1x as broad as long, its breadth at middle 1.1x as that of posterior margin; sides rounded in front and constricted posteriorly; anterior margin 0.75x as broad as posterior margin, truncate dorsally and vertical laterally, posterior margin subtruncate; upper surface coarsely punctate, without any stria. Legs with hind tibial apex without any dense, golden yellow hairs. **Elytra** broadly ovate, with basal margin strongly raised, its external angle acute, with a distinct humeral fold, strongly compressed posteriorly; apex sharply mucronate in both the sexes; stria finely punctatostriate; intervals broad and convex, posterior declivity more or less strongly impressed, slopes much more gradually, its outline straight and not sinuate; apical half with erect, elongate scales; elytral vestiture with predominant scales subcircular to squarish, pink, with patches of granulated areas (fig. 95), less predominant elongate, brown, broad and rectangular at base, gradually narrowing and smoothly rounded at apex, with ridges (fig. 96).

Male genitalia: Aedeagus with median lobe very slender, length: breadth ratio 8:1, uniformly broad, apex

rounded; apophyses short, 0.43x as long as the median lobe (figs. 201–202). Tegmen with dorsal piece 4x as broad as the basal piece; parameres long, broadened to a rounded apex; manubrium moderately long, as long as apophyses, slightly bent at rounded apex (fig. 203). Spiculum gastrale with shaft slightly shorter than median lobe, 0.93x as long as median lobe, uniformly thick, apex bent and pointed; basal prongs equal, their apices triangular (fig. 169).

Female genitalia: Spermatheca could not be described. Spiculum ventrale with shaft elongate, uniformly thick, apex blunt; basal plate 0.2x as long as shaft, basal half transverse, apical half conical, apex rounded with tuft of hairs, longer than broad (1:1.8) (fig. 152).

Length: male, 8.00 mm; female, 8.52 mm. *Breadth:* male, 2.85 mm; female, 2.70 mm.

Specimens examined: 1 male, INDIA: Kerala: Cochin: Mappily Valley, 16–19.IX.1923, Coll. Ramakrishna; 1 female, Tamil Nadu: Coimbatore: 1988, without collector's name, on tea.

Associated habitats: Tea

Distribution: India: Kerala: Kochi; Tamil Nadu: Coimbatore.

11. *Indomias kriparami* Ramamurthy sp. nov.

(figs. 21, 45, 69, 120, 121, 146, 164, 179, 234, 235 and 236)

Diagnosis: This species resembles *I. acutipennis* (Boheman) and is distinguished by the following characters: Rostrum with anterior margin only 0.54x as broad as the posterior margin; median furrow long, narrow, reaching frons and running up to one third of eyes. Antennae with first segment of funicle 1.5x as long as second; club with 3 distinct rows of hairs at joints. Elytra at posterior declivity distinctly sinuate, their apices separately pointed but not mucronate. Prothorax with upper surface rugose. Male genitalia with dorsal piece of tegmen 5x as broad as the basal piece. Female genitalia with shape of basal plate laminate, spermatheca with its proximal arm 1.1x as long as distal arm.

Description: **Colour** black with pale green vestiture. **Head** as long as rostrum, upper surface convex, with shallow, scattered punctations, hidden behind vestiture. **Rostrum** shallowly impressed at the middle dorsally, as long as broad, anterior margin only 0.54x as broad as posterior margin; median furrow long, narrow, reaching frons and running up to one third of eyes; lateral carinae distinct; sides narrowed anteriorly; scrobes 0.75x as long as rostrum, broadly rounded at either ends and divergent from eyes. Eyes dorsolateral, convex, 2x as long as broad (figs. 21 and 45). **Antennae** piceous; scape gradually clavate; funicle with first segment 1.5x as long as the second, third the shortest of all, fourth to sixth equal, seventh broadest of all; club with 3 distinct rows of hairs, at its joints (fig. 69). Prothorax as broad as long, its breadth at middle 1.1x as that of posterior margin; sides rounded; anterior margin only 0.83x as broad as posterior margin, truncate dorsally and vertical laterally, posterior margin truncate; upper surface rugose, with shallow, scattered punctations, interspaces granulate. Legs with hind tibial apex without any dense, golden yellow hairs. **Elytra** broadly ovate, with basal margin strongly raised, its external angle acute, humeral fold present but not projecting; more or less strongly impressed on declivity, apices slightly pointed but not mucronate; stria shallowly punctate; intervals broad and convex, fourth, fifth and sixth shallowly impressed at the posterior declivity, posterior declivity distinctly sinuate; elytral vestiture with predominant scales curved, but elongate, dark brown with a short pedicel, broadest at apex, with inner core opaque and granulated (fig. 120), less predominant more elongate, brown inner core opaque and with 5 ridges (fig. 121).

Male genitalia: Aedeagus with median lobe elongate, straight, even, in profile not arcuate, apex broadly rounded, length: breadth ratio 1:0.63; apophyses 0.63x as long as median lobe, their apices rounded and dark brown, well sclerotized (figs. 234–235). Tegmen with dorsal piece 5x as broad as the basal piece; parameres short, broad and apices pointed; manubrium elongate, 0.5x as long as median lobe, with its apex enlarged and rounded (fig. 236). Spiculum gastrale with shaft 1.06x as long as the median lobe, uniformly thick, its apex blunt, 2x as long as manubrium, basal prongs subequal, their apices pointed (fig. 179).

Female genitalia: Spermatheca with proximal arm 1.1x as long and 3x as broad as the distal arm, angle between proximal and distal arms obtuse; nodulus squarish, with apex rounded; ramus rectangular, 2x as

broad as the nodulus, cornu short, narrowed towards apex and pointed (fig. 146). Spiculum ventrale with shaft uniformly thick, very slender, its apex curved and rounded; basal plate only 0.26x as long as the shaft, laminate, broadest at base, slightly longer than broad (1.15:1), apex rounded with slender hairs, apical half conical (fig. 164).

Length: male, 8.40 mm; *Breadth*: male, 2.47 mm.

Holotype: 1 male, INDIA: Kerala: Malabar: Dhony forests, 26.V.1922. Coll. Ramakrishna; *Allotype*: 1 female, with the same data as above (NPC).

Distribution: India: Kerala.

Etymology: The name *I. kripami* **sp. nov.** is derived from and in the honour of Dr. Kripa Ram Koundal, Joint Director (Research), IARI, New Delhi, in particular for his support in research projects on insect taxonomy.

12. *Indomias lividus* (Marshall)

(figs. 9, 33, 60, 102, 103, 104, 174, 219, 220 and 221)

Sympiezomias lividus Marshall, 1916: 166; 1941: 350 [BMNH]

Description: **Colour** black or piceous, with dense, greyish vestiture, varied, with small, vague darker markings or else with brownish vestiture, with a pale greenish reflection or with metallic green vestiture. **Head** 1.1x as long as rostrum, upper surface convex, with fine, scattered punctations, frons impressed. **Rostrum** deeply impressed at middle dorsally, as broad as long; anterior margin 0.75x as broad as posterior margin; median furrow short, uniformly broad and rounded at either ends; lateral carinae distinct, reaching up to anterior margin of eye; scrobes much longer, 0.8x as long as rostrum, uniformly broad, smoothly rounded and parallel at either ends. Eyes dorsolateral, convex, 2x as long as broad, space between eyes as much as between scrobes (figs. 9 and 33). **Antennae** reddish brown; scape gradually clavate; funicle with first segment 1.1x as long as second, all funicular segments with whorl of hairs at middle; club densely hairy throughout, its joints invisible due to hairy appearance (fig. 60). Prothorax 1.04x as long as broad, breadth at middle 1.1x as that of posterior margin; sides more rounded and narrower in male than female; anterior margin only 0.83x as broad as posterior margin, truncate dorsally and acute laterally, posterior margin subtruncate; upper surface with shallow, subconfluent punctations, more or less hidden behind vestiture, with a faint zig zag stria, with broad depressions at lateral sides, due to impression. Legs with hind tibial apex without any dense, golden yellow hairs. **Elytra** ovate, basal margin slightly raised, humeral fold distinct, having almost the appearance of a true shoulder, so that external basal angle becomes obtuse, posterior declivity not impressed; apices not or scarcely mucronate; stria with comparatively large and deep punctations; intervals not much broader than stria, third and fifth 1.33x as broad as the others and more raised, usually alternate ones slightly raised, elongate scales on the intervals short, recumbent and inconspicuous, except sparsely at apex; elytral vestiture with three types of scales, predominant flat, circular, orange red, with irregular impressions and a hyaline outer core (fig. 104), less predominant oval, with ridges (fig. 103), the least predominant round, with ridges starting a little distance away from base (fig. 102).

Male genitalia: Aedeagus with median lobe slender apex rounded, almost uniformly broad throughout; length: breadth ratio 5.33:1, becomes broadest at its junction with apophyses; apophyses 0.62x as long as the median lobe (figs. 219–220). Tegmen with dorsal and basal pieces equally broad; parameres very long, slender, their apices indistinct; manubrium moderately long, 0.62x as long as the median lobe, more or less uniformly broad, with apex slightly deflected and rounded (fig. 221). Spiculum gastrale 1.25x as long as median lobe and 2x as long as manubrium, broadened towards base, its apex narrowed, deflected and bent; basal prongs almost equal, massive, their apices pointed (fig. 174).

Length: male, 9.40 mm; *Breadth*: male, 3.13 mm.

Specimens examined: 1 male, INDIA: Tamil Nadu: Nilgiris, Coll. T. V. Campbell, without date; 1 male, Karnataka: Chickaballapura, Coll. T. V. Campbell, without date.

Distribution: India: Karnataka: Chickaballapura; Tamil Nadu: Nilgirii Hills.

Taxonomic note: Marshall (1916) states that intervals are of equal height and only sometimes the alternate ones are raised but on the contrary alternate intervals are raised and intervals are not of equal height.

13. *Indomias maicykuttyae* Ramamurthy sp. nov.

(figs. 20, 43, 68, 118, 119, 178, 231, 232 and 233)

Diagnosis: This species resembles *I. cretaceus* (Faust) and is distinguished by the following characters: Rostrum deeply impressed at the middle dorsally, median furrow short, broad, oval, with ends rounded. Prothorax as long as broad, upper surface shallowly punctate. Antennae with first funicle segment 1.3x as long as the second. Elytra with humeral fold not projecting, fourth, fifth and sixth intervals with an impression at the posterior declivity. Male genitalia with shaft of spiculum ventrale 1.2x as long as median lobe, apex of manubrium rounded and capitate, apophyses 0.77x as long as median lobe.

Description: **Colour** black with pale grey or black vestiture. **Head** only 0.8x as long as rostrum, upper surface convex, with shallow, scattered punctations. **Rostrum** deeply impressed at the middle dorsally, 1.05x as long as broad, its breadth at anterior margin 0.73x as that of posterior margin; median furrow short, broad, oval with either ends rounded; lateral carinae distinct throughout rostrum; sides narrowed towards anterior margin; scrobes uniformly broad, rounded at either ends and broadest towards eyes. Eyes dorsal and convex (figs. 20 and 43). **Antennae** reddish brown; scape abruptly clavate; funicle having its first segment 1.3x as long as the second, third and fourth subequal, fifth and sixth equal, seventh broadest; club conical and hairy (fig. 68). Prothorax as long as broad, its breadth at middle 1.1x as broad as posterior margin; sides rounded; anterior margin only 0.86x as broad as posterior margin, truncate dorsally and acute laterally, posterior margin subtruncate; upper surface shallowly punctate and interspaces obscurely granulate. Legs with hind tibial apex without any dense, golden yellow hairs. **Elytra** broadly ovate, with basal margin strongly raised, its external angle acute, humeral fold present but not projecting; not at all impressed on the declivity, apices separately pointed but not truly mucronate; stria shallowly punctate; intervals broad, convex and raised, fourth, fifth and sixth with an impression at the posterior declivity; elytral vestiture with predominant scales subrectangular to subovate, yellow, with 9–10 ridges (fig. 118), less predominant, more elongate, brown, broadened towards apex, with 3 ridges (fig. 119).

Male genitalia: Aedeagus with median lobe membranous at middle, in profile arcuate at base, its apex pointed, length: breadth ratio 9:1; apophyses 0.77x as long as median lobe, apices truncate (figs. 231–232). Tegmen with dorsal piece 7x as broad as basal piece; parameres long, pointed at apices; manubrium gradually thickened towards rounded apex, 0.5x as long as shaft of spiculum gastrale (fig. 233). Spiculum gastrale uniformly thickened, narrowed towards either ends, its apex bent at acute angle and rectangular; basal prongs subequal, their apices rounded, and each prong with a wavy base (fig. 178).

Length: male, 8.55 mm; **Breadth:** male, 2.73 mm.

Holotype: 1 male, INDIA: Tamil Nadu: Thadiankudisai, 29. IX. 1987, Coll. Kailash, on shrubs (NPC).

Distribution: India: Tamil Nadu.

Etymology: This species is named after its collector Dr. P. Maicykutty Mathew a student of entomology when this specimen was under study.

14. *Indomias mangalai* Ramamurthy sp. nov.

(figs. 14, 48, 73, 126, 127, 156, 181, 225, 226 and 227).

Diagnosis: This species resembles *I. acutipennis* (Boheman) and is distinguished by the following characters: Scrobes uniformly broadly pointed anteriorly and broadly rounded posteriorly, oriented parallel towards eyes. Prothorax broadest at middle, apices of elytra pointed but not mucronate. Male genitalia with length: breadth ratio of aedeagus 5.5:1. Female genitalia with spiculum ventrale having its basal plate triangular, its apex rounded with 4–5 slender hairs. Elytral vestiture with predominant scales ovate, reddish brown with 5–6 ridges.

Description: Colour black, with pale or dull green vestiture. **Head** as long as rostrum, upper surface convex, with shallow and scattered punctations, usually hidden behind vestiture. **Rostrum** shallowly impressed at middle dorsally, as long as broad, anterior margin 0.85x as broad as the posterior margin; median furrow broadly rounded anteriorly, but pointed posteriorly; lateral carinae extend up to margin of eyes; scrobes uniformly broad, pointed anteriorly and broadly rounded posteriorly, oriented parallel towards the eyes. Eyes dorsal, conical and moderately convex (figs. 14 and 48). **Antennae** reddish brown; scape abruptly clavate; funicle with first segment 1.16x as long as the second, third and fourth equal, fifth and sixth subequal, sixth bulbous, seventh conical and broadest of all; club cylindrical, broader than funicle (fig. 73). Prothorax 1.04x as broad as long, it is broadest at middle and 1.07x as broad as posterior margin; sides rounded; anterior margin only 0.82x as broad as posterior margin, truncate dorsally, acute laterally, posterior margin subtruncate, basal lobe slightly emarginate; upper surface with shallow, scattered punctations, interspaces granulate. Legs with hind tibial apex without any dense, golden yellow hairs. **Elytra** ovate, with basal margin strongly raised, its external angle acute, humeral fold present but not projecting, more or less strongly impressed on declivity, posterior declivity distinctly sinuate; apices pointed but not mucronate; stria shallowly punctate; intervals moderately broad, upper surface convex, much raised; elytral vestiture with predominant scales ovate, reddish brown, with 5–6 ridges (fig. 126), less predominant more elongate, base truncate, with pedicel, inner core opaque and granulated, with 3 ridges (fig. 127).

Male genitalia: Aedeagus with median lobe elongate but broadened towards apex and much narrowed towards base, in profile base arcuate, apex broadly rounded, membranous at middle, broadest near its junction with apophyses, length: breadth ratio 5.5:1, apophyses 0.57x as long as median lobe (figs. 225–226). Tegmen with dorsal piece 5x as broad as basal piece; parameres long, apices rounded; manubrium short, slender, with a blunt apex, only 0.31x as long as median lobe (fig. 227). Spiculum gastrale with shaft, elongate, slender, but broadened to a rounded apex, which is bent at right angle, 1.05x as long as median lobe; basal prongs subequal, their apices pointed (fig. 181).

Female genitalia: Spermatheca could not be described. Spiculum ventrale with shaft 4.8x as long as basal plate, almost uniformly thick, its apex enlarged and rounded; basal plate triangular, 1.3x as long as broad, its apex rounded, with 4–5 slender hairs (fig. 156).

Length: female, 8.09 mm; **Breadth:** female, 2.70 mm.

Holotype: 1 female, INDIA: Kerala: Malabar: Dhony forests, 26.V.1922, Coll. Ramakrishna; **Allotype:** 1 male, with same data as holotype; **Paratype:** 1 female, with same data as holotype (NPC).

Distribution: India: Kerala.

Etymology: The name *I. mangalai* **sp. nov.** is derived from and in the honour of Dr. Mangala Rai, Secretary, DARE and Director General, ICAR, New Delhi, in particular his fondness for the discipline of insect taxonomy.

15. *Indomias marshalli* Ramamurthy **sp. nov.**

(figs. 17, 38, 65, 110, 111, 145 and 149)

Diagnosis: This species resembles *I. decipiens* (Marshall) and is distinguished by the following characters: Rostrum shallowly impressed. Elytra with longitudinal curvature gradually sloping posteriorly. Head with nine distinct rows of elongate curved scales. Antennae with first funicle segment 1.5x as long as second. Prothorax 1.1x as broad as long. Elytra with humeral fold not prominent, with rounded apices.

Description: Colour black with pale green vestiture. **Head** slightly shorter than rostrum (1:1.1), upper surface convex, with deep scattered punctations. **Rostrum** shallowly impressed at middle dorsally, as long as broad, breadth at anterior margin 0.75x as that of posterior margin; median furrow moderately long, uniformly thick; lateral carinae distinct; with nine distinct rows of elongate, curved scales; sides rounded, slightly narrowed towards anterior margin and dilated; scrobes 0.6x as long as rostrum, bent anteriorly but broadly rounded and convergent posteriorly, space between scrobes as much as breadth of rostrum at anterior margin. Eyes dorsolateral and convex (figs. 17 and 38). **Antennae** brown; scape gradually thickened; funicle with its first segment 1.5x as long as second, third to sixth bead shaped, seventh slightly longer than other segments;

club with first segment transverse (fig. 65). Prothorax 1.1x as broad as long, its breadth at middle almost equal to that of posterior margin; sides straight at middle and towards posterior margin, but rounded at anterior margin; anterior margin truncate, 0.66x as broad as truncate posterior margin, and vertical laterally, basal lobe emarginate; upper surface with scattered, deep punctations, without any stria. Legs with hind tibial apex without any dense, golden yellow hairs. **Elytra** ovate, with basal margin strongly raised, its external angle perpendicular or acute, humeral fold present but not prominent, not at all impressed at declivity; apices rounded; stria deeply punctate, intervals of equal breadth, convex and raised; upper surface less convex, deeper near base and middle, gradually sloping behind; elytral vestiture with predominant scales elongate, reddish brown with a truncate base, rounded apex and with 4–5 ridges (fig. 111), less predominant conspicuous, subcircular, with a broad squarish base, with 9–10 ridges (fig. 110).

Female genitalia: Spermatheca with proximal arm 2.5x as broad as the distal arm, angle between the arms obtuse; nodulus round, apex pointed; ramus cuboidal, 2.5x as broad as nodulus; cornu tubular with apex narrowed, deflected and pointed (fig. 145). Spiculum ventrale with its shaft 4.5x as long as basal plate, at apex broadly rounded; basal plate laminate, slightly longer than broad (1.2:1), apex flat and bare, apical half subconical, basal half trapezoidal (fig. 149).

Length: female, 9.46 mm; **Breadth:** female, 2.93 mm.

Holotype: 1 female, INDIA: Kerala: Malabar: Dhony forests, 26.V.1922. Coll. Ramakrishna (NPC).

Distribution: India: Kerala.

Etymology: This species is named in honour of late Sir Guy.A.K. Marshall, who had been a pioneer in taxonomic studies on weevils of the Indian subcontinent.

16. *Indomias mayarami* Ramamurthy sp. nov.

(figs. 25, 52, 72, 124, 125, 147 and 161)

Diagnosis: This species resembles *I. acutipennis* (Boheman) and is distinguished by the following characters: Head 1.1x as long as rostrum, median furrow on rostrum broadly rounded anteriorly but narrow and pointed posteriorly, reaching up to middle of the eyes; scrobes 0.87x as long as rostrum. Female genitalia with spiculum ventrale having a spatulate basal plate, whose apex is rounded with few distinct hairs, apex of basal plate truncate.

Description: **Colour** black, with pale or dull green vestiture. **Head** 1.1x as long as rostrum, upper surface almost plain with deep, scattered punctations; vertex convex. **Rostrum** shallowly impressed at middle dorsally, as long as broad, anterior margin only 0.75x as broad as the posterior margin; median furrow broadly rounded anteriorly, but narrow and pointed posteriorly, reaching up to the middle of eyes; lateral carinae distinct; sides almost straight; scrobes 0.87x as long as rostrum, broad anteriorly, narrow, sharply pointed and convergent posteriorly. Eyes dorsolateral and convex (figs. 25 and 52). **Antennae** brown; scape gradually thickened; funicle with first segment 1.1x as long as second, third to fifth equal, sixth and seventh subequal; club broader than funicle, with whorl of hairs on its second, third and fourth joints (fig. 72). Prothorax 1.05x as long as broad, its breadth at middle 1.05x as posterior margin; sides well rounded anteriorly, but straight and parallel posteriorly; anterior margin only 0.75x as broad as posterior margin, truncate dorsally, acute laterally, posterior margin subtruncate; upper surface with shallow, scattered punctations, their interspaces tuberculate. Legs with hind tibial apex without any dense, golden yellow hairs. **Elytra** ovate, with basal margin strongly raised, its external angle acute, humeral fold prominent, more or less strongly impressed on declivity, posterior declivity distinctly sinuate; apices rounded; stria shallowly punctate; intervals broad, their upper surface moderately convex; elytral vestiture with predominant scales elongate, yellowish orange, with a small pedicel, apex broadened with 6 ridges (fig. 125), less predominant circular, yellow, with many broken ridges and a dark, circular, granulated area (fig. 124).

Female genitalia: Spermatheca with proximal arm swollen, as long as and 3.5x as broad as distal arm, angle between the arms obtuse; nodulus distinct, bulbous, with a cylindrical projection; ramus cuboidal, only 1.3x as broad as nodulus, its apex blunt; cornu short, bent at apex and pointed (fig. 147). Spiculum ventrale

with basal plate 1.5x as long as broad, apex rounded with few distinct hairs, its apex spatulate, sides straight, as if cut vertically, shaft 4x as long as basal plate, uniformly thick with rounded apex (fig. 161).

Length: female, 10.00 mm; *Breadth*: female, 3.13 mm.

Holotype: 1 female, INDIA: Kerala: Malabar: Dhony forests, 26.V.1922, Coll. Ramakrishna (NPC).

Distribution: India: Kerala.

Etymology: This species is named after Shri Mayaram in recognition of the services rendered by him in the processing of specimens for the present study.

17. *Indomias menoni* Ramamurthy sp. nov.

(figs. 15, 44, 109, 144 and 163)

Diagnosis: This species resembles *I. kraatzi* (Heller) and *I. albizziae* sp. nov., and distinguished by the following characters: Rostrum with lateral carinae short, not extending beyond the anterior margin of eyes. Prothorax with median stria rounded posteriorly and straight anteriorly, restricted only to the posterior one third, its maximum width lesser than that of elytra. Length: breadth ratio of whole body never more than 3:1. Female genitalia with spiculum ventrale, having its apical half of basal plate perfectly conical, spermatheca with proximal arm 1.5x as long as cornu. Rostrum with anterior margin 0.93x as broad as the posterior margin.

Description: **Colour** black, with pale or apple green vestiture; sides of head, prothorax and elytra with shining, metallic green vestiture. **Head** as long as rostrum, upper surface moderately convex, with shallow, scattered punctations; vertex shallowly impressed. **Rostrum** strongly impressed at middle dorsally, 1.2x as broad as long, anterior margin 0.93x as broad as the posterior margin, median furrow uniformly broad, slightly narrowed towards posterior margin, reaching the middle of eyes, lateral carinae running throughout the rostrum, without any juxta marginal carina from apex to above eye; sides narrowed and parallel towards the anterior margin; scrobes uniformly broad, smoothly rounded and bent anteriorly, but smoothly pointed, narrowed and divergent towards the eyes, space between scrobes as much as the length of rostrum. Eyes dorsolateral and convex (figs. 15 and 44). **Antennae** reddish brown; scape gradually clavate; funicle with first segment 1.6x as long as second and also broader than second. Prothorax 1.2x as broad as long, its breadth at middle almost equal to posterior margin, broadest at the posterior margin; sides slightly rounded at the middle, well rounded at the anterior margin, and straight towards the posterior margin; anterior margin only 0.67x as broad as posterior margin, truncate dorsally, acute laterally, while posterior margin is subtruncate; upper surface coarsely punctate, with a deep, median stria restricted to posterior one thirds, rounded towards the posterior margin and straight towards the anterior margin. Legs with hind tibial apex having well-developed, dense golden yellow hairs. **Elytra** broadly ovate, with basal margin slightly raised, humeral fold present, but not prominent; apices slightly mucronate; stria finely punctate, intervals broad, plain, not raised, intervals second and third shallowly impressed at posterior declivity, with short, recumbent elongate scales; elytral vestiture with subovate, yellow scales, with patches of granulated areas (fig. 109).

Female genitalia: Spermatheca with proximal arm 1.5x as long and 2.5x as broad as distal arm, angle between two arms obtuse; nodulus conical and apex rounded; ramus cylindrical and almost as broad as nodulus; cornu with apex narrowed and bluntly rounded (fig. 144). Spiculum ventrale with shaft broadest at middle, bent at rounded apex; basal plate longer than broad (1.6:1), with its apex rounded; apical half of basal plate perfectly conical, shaft 4.25x as long as basal plate (fig. 163).

Length: female, 10.91 mm; *Breadth*: female, 3.99 mm.

Holotype: 1 female, INDIA: without place and collector name, forest campus, 8.IV.1994, on *Albizzia lebbeck* (NPC).

Distribution: India.

Etymology: This species is named after late Dr. M.G. Ramdas Menon, who had been instrumental in teaching practical aspects of taxonomy to the authors.

18. *Indomias perroteti* (Boheman)

(figs. 7, 31, 70, 131, 132, 159, 175, 216, 217 and 218)

Brachyaspistes perroteti Boheman, 1845: 416

Sympiezomias perroteti (Boheman) Marshall, 1916: 164; 1941: 350 [NRS]

Description: **Colour** black, with yellow and white stripes on prothorax, blackish on disc, sulphur yellow below, with a broad yellow band ascending anterior and posterior margins as far as the edge of the disc, median lateral area with sparse grey vestiture, elytra with a broad yellow stripe along the extreme edge, but ceasing before the apex, a similar stripe on intervals five and six, encroaching a little on four and seven at base, and a narrower, white stripe along suture from base to declivity. **Head** 1.13x as long as rostrum, its upper surface convex, with very fine shallow punctations. **Rostrum** finely punctate, not impressed dorsally, as broad as long, its anterior margin 0.82x as broad as the posterior margin; median furrow very short, broader towards anterior margin; lateral carinae parallel and distinct running up to one third of eyes; sides narrowed towards anterior margin, where they are parallel; scrobes uniformly broad, rounded anteriorly, rectangular and parallel posteriorly towards eyes, 0.7x as long as rostrum. Eyes oval, dorsal, convex, 2x long as broad (figs. 7 and 31). **Antennae** reddish brown; scape gradually clavate; funicle with first and second segments equal, fourth, fifth and sixth equal; club oval, 3x as broad as funicle (fig. 70). Prothorax 1.05x as broad as long, its breadth at middle 1.1x as that of posterior margin; sides very slightly rounded and broadly constricted anteriorly; anterior margin 0.78x as broad as the posterior margin, truncate dorsally, acute laterally, posterior margin truncate; finely coriaceous above, with a faint, median stria, from the posterior margin up to a little distance away from the anterior margin. Legs with hind tibial apex without any dense, golden yellow hairs. **Elytra** narrowly ovate in male, broadly ovate in female, with basal margin slightly raised, humeral fold slight and not forming a prominent tubercle; apices separately and sharply mucronate in both sexes; stria deeply punctatostriate; intervals rather narrow and slightly convex, with short, white, elongate scales on the declivity, which are not erect, posterior declivity distinctly impressed, straight or slightly convex but not sinuate; elytral vestiture with predominant scales circular or subovate, reddish brown, with 11–12 ridges (fig. 131), less predominant elongate, reddish brown, with a narrow, pedicellate base, apex broadened and rectangular, inner core opaque, with 3 ridges (fig. 132).

Male genitalia: Aedeagus with median lobe having its apex rounded, length: breadth ratio 6.66:1, apophyses 0.75x as long as the median lobe, their apices clefted (figs. 216–217). Tegmen with dorsal piece 5x as broad as basal piece; parameres long, slender, their apices rounded, 0.27x as long as manubrium; manubrium slender, uniformly thick, 0.68x as long as median lobe, broadened to a subconical apex (fig. 218). Spiculum gastrale with shaft 1.12x as long as median lobe, thicker at middle, slender towards apex, with apex broad, rectangular and clefted; basal prongs equal, broad, their apices truncate (fig. 175).

Female genitalia: Spermatheca could not be described. Spiculum ventrale with shaft much slender between the base and apex, its apex blunt; basal plate spatulate, apical half conical, its apex broadly rounded, slightly longer than broad (1.16:1); ratio of length of basal plate to that of shaft 1:3.2 (fig. 159).

Length: male, 8.42–8.75 mm; female, 8.75 mm. **Breadth:** male, 2.80–2.85 mm; female, 3.00 mm.

Specimens examined: INDIA: Nilgirii Hills, 3 male, VI. 1962, B.V. David, on potato; 1 female, with same data as above (NPC).

Distribution: India: Tamil Nadu: Nilgirii Hills.

Taxonomic note: Marshall (1916) states that the faint median stria on the prothorax is seen from the base to beyond the middle, but it is found only at a little distance from the base and apex, almost approaching very near to apex; elytra narrowly ovate in male, broadly ovate in female.

19. *Indomias praeteritus* (Marshall)

(figs. 16, 35, 61, 98, 99, 142, 162, 170, 204, 205 and 206)

Sympiezomias praeteritus Marshall, 1916: 163; 1941: 350 [BMNH]

Description: **Colour** black, with glittering, metallic to bluish green vestiture; inflexed sides of prothorax, elytra and base of prothorax yellowish. **Head** as long as rostrum, upper surface convex, with scattered punctations, hidden behind dense vestiture. **Rostrum** plain dorsally, as long as broad, anterior margin 0.80x as broad as the posterior margin; median furrow short, pushed anteriorly; lateral carinae distinct and parallel; scrobes broader, squarish and fuses with rostrum anteriorly, narrowed, smoothly rounded and parallel towards the eyes. Eyes dorsolateral, slightly convex, almost 2x as long as broad, space between eyes as much as the space between scrobes and the breadth of rostrum at anterior margin (figs. 16 and 35). **Antennae** piceous; scape abruptly clavate; funicle with first segment only 0.7x as long as the second but stouter, third to fifth bead like, seventh broadest of all funicle segments; club 3x broader than funicle segments and conical (fig. 61). Prothorax as long as broad, at middle 1.1x as broad as posterior margin but narrowed anteriorly; sides rounded; anterior margin only 0.8x as broad as posterior margin, truncate dorsally and acute laterally, posterior margin subtruncate; upper surface with shallow, confluent punctations, intervals coriaceous or obscurely granulate, median stria faint, runs throughout except at base and apex. Legs with hind tibial apex without any dense, golden yellow hairs. **Elytra** with basal margin strongly raised; its external angle acute, humeral fold much less developed, being practically absent in male, while in female, it does not project beyond the outline of elytra, as seen from above, posterior declivity not impressed; stria shallowly punctate; intervals broad, almost plain, not much raised, third not raised over second, at posterior declivity; apices mucronate in both sexes; elytral vestiture with predominant scales round to obovate, bluish orange, with many ridges (fig. 99), less predominant oval, bluish orange with bifurcated ridges (fig. 98).

Male genitalia: Aedeagus with median lobe in profile not arcuate, apex rounded, broadest at middle; apex with patches of sclerotized areas, length: breadth ratio 7:1; apophyses long, slender, 0.66x as long as median lobe (figs. 204–205). Tegmen with dorsal piece 5x as broad as basal piece, shorter, 0.11x as long as manubrium; parameres very long, 0.33x as long as manubrium, finger shaped, their apices pointed; manubrium elongate, 0.64x as long as median lobe, very slender, 0.1x as broad as the median lobe, with a slightly deflected, conical apex (fig. 206). Spiculum gastrale with shaft 1.1x as long as median lobe, 0.1x as broad as median lobe, uniformly thick, with apex deflected, broadened and rounded; basal prongs subequal (fig. 170).

Female genitalia: Spermatheca with proximal arm 1.2x as long as and 4x as broad as the distal arm; nodulus 1.4x as broad as ramus, swollen, conical, ramus cylindrical; cornu slender, uniformly thick throughout, apex rounded and bent parallel to the proximal arm (fig. 142). Spiculum ventrale with shaft narrow at base, uniformly thick at middle, its apex bent, broadened and rounded; basal plate conical, much longer than broad (1.6:1), its apex rounded with tuft of slender hairs, ratio of length of basal plate to that of shaft 1:4 (fig. 162).

Length: male, 7.00–7.25 mm; *Breadth:* male, 2.5–2.65 mm.

Specimens examined: 1 male, 1 female, INDIA: Tamil Nadu: Yercaud, Shevaroyes, 4500 ft, 23.IV–4.V.1913, Coll., Fletcher, Y.R.

Distribution: India: Tamil Nadu: Yercaud.

20. *Indomias prasinus* (Boheman)

(figs. 12, 40, 62, 100, 173, 213, 214 and 215)

Brachyaspistes prasinus Boheman, 1845: 416

Sympiezomias prasinus (Boheman) Marshall, 1916: 162; 1941: 350 [NRS]

prasinus var. *subcostatus* (Marshall)

Description: **Colour** black, with uniform, dense green or blue green vestiture, sometimes with finely interspersed dark scales; sides and posterior margin of prothorax, and inflexed margins of the elytra with more or less distinct sulphur yellow powdering, vestiture not or but very slightly metallic. **Head** as long as rostrum, upper surface convex, with scattered punctations, hidden behind dense vestiture. **Rostrum** deeply impressed at middle dorsally; 1.1x as broad as long, anterior margin only 0.65x broad as the posterior margin; median

furrow very short, broad, forked posteriorly; lateral carinae running through length of rostrum; scrobes narrow and sharply pointed at either ends, much broader and parallel in between. Eyes dorsal, moderately convex, 1.7x as long as broad (figs. 12 and 40). **Antennae** brown; scape gradually broadened; funicle with first segment 0.85x as long as second, but broader than second, other funicular segments elongate, bead shaped; club with fourth joint invisible and bulbous (fig. 62). Prothorax 1.08x as broad as long, its breadth at middle 1.04x as its breadth at posterior margin; sides rounded anteriorly, but straight posteriorly; anterior margin 0.76x as broad as posterior margin, truncate dorsally and vertical laterally, posterior margin subtruncate; upper surface with shallow, confluent punctations, intervals coriaceous or obscurely granulate; median stria faint, broken but distinct posteriorly; laterally with two, distinct pits, due to impressions near the posterior margin. Legs with hind tibial apex without any dense, golden yellow hairs. **Elytra** narrowly ovate (male) or broader (female), with basal margin only slightly raised; its external angle obtuse, with distinct prominent humeral fold; apices with distinct sharp mucros in both sexes; striae finely punctate, with a shallow impression on declivity; intervals broad, almost plain, and of even height, third distinctly raised over second, at posterior declivity near apex, elongate scales inconspicuous, declivity not impressed; elytral vestiture with predominant scales obovate, orange red with 10–11 broken ridges and pedicel (fig. 100).

Male genitalia: Aedeagus with median lobe in profile arcuate at base, apex rounded, length: breadth ratio 7.5:1, broadest at junction with apophyses; transfer apparatus with a sclerotized pouch at the middle; apophyses slender, 0.66x as long as the median lobe (figs. 213–214). Tegmen with dorsal piece 3x as broad as the basal piece, very long, 0.2x as long as manubrium; parameres moderately long, slender, their apices indistinct; manubrium 0.66x as long as median lobe, uniformly thick and with a pointed apex (fig. 215). Spiculum gastrale with shaft 2x as long as manubrium, uniformly thick throughout except at apex, which is slightly narrow, deflected and rounded; basal prongs equal, their apices pointed (fig. 173).

Length: male, 7.1 mm; **Breadth:** male, 2.65 mm.

Specimens examined: 1 male, INDIA: Tamil Nadu: Nilgiris, Coonoor, 6–13.V.1919, Coll. P. S. Nathan (NPC).

Distribution: India: Tamil Nadu: Nilgiri Hills.

Taxonomic note: Marshall (1916) described an infraspecific taxa namely, variety *subcostatus*; except for some minor morphological differences, Marshall confirms that it is indistinguishable based on male genitalia. Furthermore, as the species *I. prasinus* and its variety *subcostatus* are not geographically isolated it is not considered as a subspecies in the present study.

21. *Indomias premlali* Ramamurthy sp. nov.

(figs. 22, 47, 71, 122, 123, 180, 237, 238 and 239)

Diagnosis: This species resembles *I. decipiens* (Marshall) and is distinguished by the following characters: Rostrum deeply impressed at middle dorsally, median furrow broadest anteriorly and narrowed posteriorly. Elytra less convex longitudinally and slopes gradually posteriorly. Male genitalia with aedeagus having its apophyses only 0.42x as long as median lobe, tegmen with manubrium 0.5x as long as median lobe, spiculum gastrale with shaft 1.05x as long as median lobe and its apex clefted.

Description: **Colour** black with pale green vestiture. **Head** as long as rostrum, upper surface moderately convex, with shallow, scattered punctations, hidden behind vestiture. **Rostrum** deeply impressed at middle, as long as broad in male and 1.25x as long as broad in female; anterior margin 0.85x as broad as posterior margin, median furrow broadest anteriorly, but narrowed posteriorly, lateral carinae distinct, reaching up to middle of eyes; sides narrowed from posterior to anterior margin; scrobes narrowed and pointed anteriorly, broadened and divergent posteriorly. Eyes dorsal, circular and moderately convex (figs. 22 and 47). **Antennae** piceous; scape gradually thickened; funicle with first segment 1.14x as long as second, third and fourth equal, fifth to seventh equal and bead like; club broader than funicle segments, with hairs in rows, throughout its outer margin (fig. 71). Prothorax 1.06x as broad as long, at middle 1.1x as broad as the posterior margin; sides rounded; anterior margin only 0.8x as broad as the posterior margin, truncate dorsally and vertical laterally,

while posterior margin subtruncate; sides rounded; upper surface rugosely punctate, their interspaces granulate. Legs with hind tibial apex without any dense, golden yellow hairs. **Elytra** ovate, with basal margin strongly raised, its external angle acute, humeral fold prominent, not at all impressed on declivity; apices rounded in male, pointed but not mucronate in female; stria shallowly punctate; intervals convex, much raised; elytral vestiture with predominant scales squarish, reddish brown, with 9–11 ridges (fig. 122), less predominant more elongate, brown with a rounded base and gradually broadened apex, their inner core opaque and granulated, with 4 ridges (fig. 123).

Male genitalia: Aedeagus with median lobe in profile arcuate at base, its apex rounded, length: breadth ratio 6:1, apophyses 0.42x as long as median lobe (figs. 237–238). Tegmen with dorsal piece 3x as broad as the basal piece; parameres moderately long and their apices pointed; manubrium 0.52x as long as median lobe, very slender, its apex broadened and rounded (fig. 239). Spiculum gastrale with shaft 2x as long as manubrium, uniformly slender, its apex clefted, basal prongs subequal, their apices broadly rounded (fig. 180).

Length: male, 7.78–8.5 mm; female, 9.14 mm. **Breadth:** male, 2.50–3.20 mm; female, 2.70 mm.

Holotype: 1 male, INDIA: Kerala: Malabar: Dhony forests, 26.V.1922, Coll. Ramakrishna; **Allotype:** 1 female, with same data as above; **Paratype:** 1 male, with same data as above (NPC).

Distribution: India: Kerala.

Etymology: The name *I. premlali* **sp. nov.** is derived from and in the honour of Dr. Prem Lal Gautam, Ex-Deputy Director General, Crop Sciences, ICAR, New Delhi, in particular for his sustained support and interest in the taxonomic work of the author.

22. *Indomias rajendrani* Ramamurthy **sp. nov.**

(figs. 19, 37, 66, 114, 115 and 155)

Diagnosis: This species resembles *I. cretaceus* (Faust) and is distinguished by the following characters: Rostrum deeply impressed, median furrow club shaped, ending in a narrow, faint line, before reaching vertex. Elytra with longitudinal curvature less convex, gradually sloping posteriorly, humeral fold not prominent, their apices mucronate, intervals four, five and six deeply impressed at the posterior declivity. Antennae with first funicle segment 1.5x as long as the second.

Description: **Colour** black with dull green vestiture. **Head** as long as rostrum, upper surface convex, with deep, scattered punctations. **Rostrum** deeply impressed at middle dorsally, as long as broad, anterior margin 0.9x as broad as its posterior margin; median furrow club shaped, ending in a narrow, faint line, before reaching vertex; lateral carinae distinct; sides straight; scrobes narrowed at the middle and pointed at either ends, space between scrobes as much as the length of scrobe. Eyes dorsal, convex, 2x as long as broad (figs. 19 and 37). **Antennae** dark brown; scape abruptly clavate; funicle with its first segment 1.5x as long as second, broader than second (fig. 66). Prothorax 1.02x as broad as long, its breadth at middle 1.1x broad as posterior margin; sides rounded; anterior margin only 0.87x as broad as posterior margin, truncate dorsally, acute laterally, posterior margin truncate; upper surface with coarse, scattered punctations, their interspaces granulate, without any stria. Legs with hind tibial apex without any dense, golden yellow hairs. **Elytra** ovate, with basal margin strongly raised, its external angle acute, humeral fold present, but not prominent; not at all impressed on declivity, apices mucronate; stria punctate, intervals uniformly broad, surface convex and raised, intervals four, five and six deeply impressed at posterior declivity; elytral vestiture with predominant scales, curved, elongate, reddish brown, with short pedicel, inner core opaque and with 2–4 ridges (fig. 114), less predominant more elongate, broadened towards apex and with 3 ridges (fig. 115).

Female genitalia: Spermatheca could not be described. Spiculum ventrale with shaft 4.2x as long as basal plate, more or less uniformly thick, its apex slightly deflected and clubbed; basal plate spatulate, broadest at the basal half, slightly longer than broad (1.12:1), its apex bluntly rounded with tuft of short hairs (fig. 155).

Length: female, 8.92 mm; **Breadth:** female, 3.19 mm.

Holotype: 1 female, INDIA: Kerala: Malabar: Dhony forests, 26.V.1922. Coll. Ramakrishna (NPC).

Distribution: India: Kerala.

Etymology: The name *I. rajendrani* **sp. nov.** is derived from and in the honour of Dr. T.P. Rajendran, Assistant Director General, Plant Protection, ICAR, New Delhi in particular for showing keen interest in the taxonomic studies on insects.

23. *Indomias ramakrishnani* Ramamurthy sp. nov.

(figs. 4, 39, 67, 116, 117, 177, 228, 229 and 230)

Diagnosis: This species resembles *I. cretaceus* (Faust) and is distinguished by the following characters: Shape more elongate, length: breadth ratio of whole body 3.2:1. Rostrum deeply impressed at the middle dorsally, median furrow rounded anteriorly and pointed posteriorly. Antennae with first funicle segment 1.5x as long as the second. Elytra with intervals three, four, five and six slightly impressed at the posterior declivity and humeral fold not prominent, their apices rounded.

Description: Colour black with pale or dull green vestiture. **Head** as long as rostrum, upper surface flat, with deep, scattered punctations. **Rostrum** deeply impressed at the middle dorsally; as long as broad, anterior margin 0.88x as broad as the posterior margin; median furrow rounded anteriorly and pointed posteriorly, located more towards the anterior margin; lateral carinae distinct, running throughout the length of rostrum; sides straight; scrobes uniformly broad, parallel anteriorly and smoothly rounded at either ends. Eyes dorsolateral, convex, 2x as long as broad (figs. 4 and 39). **Antennae** piceous; scape abruptly clavate; funicle with its first segment 1.5x as long as the second, third to fifth conical, sixth longer and broader at apex; club transverse (fig. 67). Prothorax 1.09x as broad as long, its breadth at middle 1.1x as broad as the posterior margin; sides rounded at the middle and towards the anterior margin, but straight towards the posterior margin; anterior margin 0.68x as broad as the posterior margin, truncate dorsally and vertical laterally, posterior margin subtruncate, basal lobe slightly emarginate; upper surface rugosely punctate and interspaces perfectly tuberculate. Legs with hind tibial apex without any dense, golden yellow hairs. **Elytra** narrowly ovate, with basal margin strongly raised, its external angle acute, humeral fold small and not projecting; not at all impressed on declivity, apices rounded; stria deeply punctate, intervals broad, convex and raised, intervals three, four, five and six slightly impressed on declivity; elytral vestiture with predominant scales circular, reddish brown, with patches of granulated areas (fig. 116), less predominant, elongate, brown, with much broader and triangular base, apex smoothly rounded, narrowed and bent, with 2 ridges (fig. 117).

Male genitalia: Aedeagus with median lobe tubular; in profile arcuate at base, apex sharply pointed, length: breadth ratio 9.5:1, gradually broadened from base to apex, broadest at its junction with apophyses; apophyses 0.68x as long as median lobe (figs. 228–229). Tegmen with dorsal piece 3x as broad as basal piece; parameres long, narrowed to a sharply pointed apex; manubrium moderately long, 0.42x as long as median lobe, uniformly thick, its apex enlarged and rounded (fig. 230). Spiculum gastrale, with shaft 2.5x as long as manubrium, uniformly thick, its apex bent at right angles, enlarged and rounded; basal prongs subequal, their apices smoothly pointed (fig. 177).

Length: male, 8.15 mm; **Breadth:** male, 2.53 mm.

Holotype: 1 male, INDIA: Kerala: Malabar: Dhony forests, 26.V.1922, Coll. Ramakrishna (NPC).

Distribution: India: Kerala.

Etymology: This species is named in honour of late Dr. T.V. Ramakrishna Ayyar, the collector of this specimen.

24. *Indomias sharanagoudai* Ramamurthy sp. nov.

(figs. 24, 49, 74, 128, 182, 240, 241 and 242)

Diagnosis: This species resembles *I. frater* (Marshall) and is distinguished by the following characters: Colour black with slightly bluish green vestiture, margins of elytra near humeral fold with dense, golden

yellow vestiture. Vertex with a minute, circular fovea. Prothorax as long as broad. Antennae with first segment of funicle 1.4x as long as second. Scrobes nearly square anteriorly. Elytral vestiture with obovate reddish brown scales, with clefted base and 10–12 ridges. Male genitalia with apophyses 0.44x as long as median lobe, manubrium with apex broadened and bulbous, shaft of spiculum gastrale 0.88x as long as median lobe.

Description: **Colour** black with apple green or slightly bluish green vestiture, more or less shining, margins of elytra especially near humeral fold with dense, golden yellow vestiture. **Head** 1.05x as long as rostrum, upper surface moderately convex, vertex with a minute, circular fovea. **Rostrum** shallowly impressed at middle dorsally, as long as broad; anterior margin only 0.85x as broad as posterior margin; median furrow uniformly broad, distinct; lateral carinae running through length of rostrum; sides narrowed anteriorly, where it is slightly dilated; scrobes broadest at middle, squarish anteriorly, but divergent and pointed posteriorly. Eyes dorsal, moderately convex (figs. 24 and 49). **Antennae** dark brown; scape gradually clavate; funicle with first segment 1.4x as long as the second, third and fourth equal, fifth and sixth equal; club with distinct rows of dense hairs on its joints (fig. 74). Prothorax as long as broad, broadest at middle, 1.09x as broad as the posterior margin; sides rounded; anterior margin only 0.62x as broad as the posterior margin, truncate dorsally and oblique laterally, posterior margin subtruncate, basal lobe emarginate; upper surface with very shallow, scattered punctations, interspaces obscurely granulate. Legs with hind tibial apex without any dense, golden yellow hairs. **Elytra** ovate, with basal margin strongly raised, its external angle acute, humeral fold prominent and projecting, more or less strongly impressed on declivity, posterior declivity sinuate; apices rounded; stria with punctations deep, intervals broad, plain, not raised; outline of posterior declivity not distinctly sinuate; elytral vestiture with obovate, reddish brown scales with clefted base and with 10–12 ridges (fig. 128).

Male genitalia: Aedeagus with median lobe comparatively slender at middle, broad at base and apex, length: breadth ratio 9:1, apex rounded, broadest at junction between apophyses, apophyses 0.44x as long as median lobe (figs. 240–241). Tegmen with dorsal piece 2.5x as broad as the basal piece; parameres short, slender and pointed; manubrium moderately long, slender, 0.5x as long and 0.2x as broad as the median lobe, uniformly thick, with apex much broadened and bulbous (fig. 242). Spiculum gastrale with shaft 0.88x as long as the median lobe, uniformly thick, apex deflected and bluntly rounded; basal prongs subequal, their apices broadly rounded (fig. 182).

Length: male, 7.86 mm; *Breadth:* female, 2.59 mm.

Holotype: 1 male, INDIA: Kerala: Pampadumpara, 22.I.1994. Coll. P.M. Mathew, on Cardamom; *Paratype:* 1 male, with same data as holotype (NPC).

Distribution: India: Kerala.

Etymology: The name *I. sharanagoudai* **sp. nov.** is derived from and in the honour of Dr. Sharanagouda Ayyanagouda Patil, Ex-Director of IARI, New Delhi.

25 *Indomias yercaudensis* Ramamurthy **sp. nov.**

(figs. 18, 50, 76, 105, 106, 183, 252, 253 and 254)

Diagnosis: This species resembles *I. lividus* (Marshall) and is distinguished by the following characters: Rostrum plain dorsally. Elytra with basal margin strongly raised, with an impression at the base of intervals five and six, intervals three and five not broader than others. Prothorax with median stria uniformly broad rounded at both ends and running across posterior two thirds. General body size with length: breadth ratio 2.8:1.

Description: **Colour** black with metallic green or bluish green vestiture, prothorax and elytra interspersed with metallic blue scales. **Head** as long as rostrum, upper surface flat or even, with shallow, confluent punctations, usually hidden behind vestiture. **Rostrum** plain dorsally, as long as broad, anterior margin 0.83x as broad as posterior margin; median furrow short, broad; lateral carinae distinct; sides straight; scrobes 2x broad as breadth at posterior margin and squarish anteriorly but narrow and convergent posteriorly. Eyes

dorsolateral, slightly or moderately convex, length: breadth ratio 2.66:1 (figs. 18 and 50). **Antennae** dark brown; scape abruptly clavate; funicle with first segment 1.16x as long as second, third and fourth subequal, fifth and sixth equal and bead like; club conical (fig. 76). Prothorax as long as broad, its breadth at middle 1.2x as broad as the posterior margin; sides rounded; anterior margin 0.9x as broad as the posterior margin, truncate dorsally and acute laterally, posterior margin truncate; upper surface with shallow confluent punctations at the middle, lateral areas rugosely punctate. Legs with hind tibial apex without any dense, golden yellow hairs. **Elytra** broadly ovate, with basal margin strongly raised, its external angle acute or perpendicular, humeral fold present and projecting, posterior declivity not impressed, with an impression at the base of intervals five and six; apices rounded; stria shallowly punctate, hidden behind vestiture; intervals broad, plain and not much raised; elytral vestiture with predominant scales circular, orange, with ridges (fig. 105), less predominant more elongate, orange, with incomplete ridges (fig. 106).

Male genitalia: Aedeagus with median lobe much slender, in profile narrowly arcuate at the base, apex pointed, length: breadth ratio 10:1, apophyses 0.85x as long as median lobe, their apices rounded; endophallus duct with a sclerotized patch and a distinct, transfer apparatus (figs. 252–253). Tegmen with dorsal piece 3x as broad as basal piece; parameres short, broad, thumb shaped; manubrium slender, uniformly thick, only 0.64x as long as median lobe, with apex deflected and truncate (fig. 254). Spiculum gastrale with shaft very slender, only 0.25x as broad as the median lobe, 1.1x as long as median lobe, apex pointed; basal prongs equal, with their rounded apices (fig. 183).

Length: male, 7.41 mm; *Breadth:* male, 2.45 mm.

Holotype: 1 male, INDIA: Tamil Nadu: Salem: Yercaud 7–15.V.1919. Coll. Isaac (NPC).

Distribution: India: Tamil Nadu.

Etymology: This species is named after the locality Yercaud, from where it was collected.

26. *Sympiezomias subserratipes* Ramamurthy sp. nov.

(figs. 26, 46, 77, 112, 113, 185, 243, 244 and 245)

Diagnosis: This species resembles *S. serratipes* Marshall and distinguished by the following characters: Prothorax with upper surface having shallow, confluent punctations. Elytra with basal margin slightly raised; intervals broad and convex, first and second less raised, third to sixth much raised. Male genitalia with aedeagus having its apophyses considerably longer i.e., 1.07x as long as median lobe and tegmen with, manubrium 1.6x as long as median lobe.

Description: **Colour** black with pale grey vestiture. **Head** as long as rostrum, upper surface convex, with shallow, confluent punctations; frons with a median furrow, which ascends nearly vertex. **Rostrum** shallowly impressed at middle dorsally, 1.09x as long as broad, anterior margin as broad as posterior margin; median furrow very long, broad anteriorly, narrowed and pointed posteriorly, reaching up to the lower margin of eyes; lateral carinae short, but distinct, confined to middle and posterior aspects; scrobes uniformly broad at middle, narrowed at either ends, sharply pointed and convergent towards eyes. Eyes dorsolateral and convex (figs. 26 and 46). **Antennae** reddish brown; scape gradually clavate; funicle with first segment 1.2x as long as second, third to fifth equal, sixth shortest of all; club conical, slightly broader than funicle, sparsely hairy (fig. 77). Prothorax 1.1x as long as broad, at middle 1.18x as broad as posterior margin; sides rounded; anterior margin only 0.83x as broad as posterior margin, truncate dorsally and vertical laterally, posterior margin truncate; upper surface with shallow, confluent punctations; median stria uniformly broad and runs throughout the length. **Elytra** narrowly ovate, with basal margin slightly raised, humeral fold absent; apices rounded; stria shallowly punctate; intervals broad and convex, first and second less raised, third to sixth much raised; dorsal outline rather flat, posterior declivity steep, not impressed; elongate scales seen all over the surface; elytral vestiture with predominant scales circular, brown with patches of circular, granulated areas and a large, rounded patch (fig. 113), less predominant more elongate, conical, brown, its pedicel broad, apex gradually widened, with 4 ridges (fig. 112).

Male genitalia: Aedeagus with median lobe short, curved, membranous at the middle, slender, only 0.14x as broad as at middle, in its profile apex rounded, broadest at its junction with apophyses, length: breadth ratio 4:1, apophyses 1.07x as long as median lobe, much slender, 0.28x as broad as median lobe (figs. 243–244). Tegmen with dorsal piece 3x as broad as basal piece; parameres long, 0.2x as long as manubrium, moderately thick, their apices rounded; manubrium 1.6x as long as the median lobe, uniformly thick, its apex deflected and rounded with a cleft (fig. 245). Spiculum gastrale with shaft 1.4x as long as median lobe, much thicker, 1.7x as broad as manubrium, apex very broad, deflected and irregularly rounded; basal prongs equal, their apices truncate (fig. 185).

Length: male, 9.00 mm; **Breadth:** male, 2.39 mm.

Holotype: 1 male, INDIA: Himachal Pradesh: Kullu, 5.VI.1987. Coll. V.R.S. Rao, on grass, weeds (NPC).

Distribution: India: Himachal Pradesh.

Etymology: This species resembles *S. serratipes* Marshall and hence the name *S. subserratipes* **sp. nov.**

References

- Alonso-Zarazaga, M.A. & Lyal, C.H.C. (1999) *A world catalogue of families and genera of Curculionoidea (Insecta: Coleoptera) (excepting Scolytidae and Platypodidae)*. Entomopraxis, S.C.P., Spain, 315 pp.
- Anonymous. (1932) Investigations on the spike disease of sandal. *Indian Institute of Science*, Bangalore, 16 pp.
- Anonymous. (1933) Investigations on the spike disease of sandal. *Indian Institute of Science*, Bangalore, 17 pp.
- Atkinson, D.J. (1926) Some types of teak defoliation. *Indian Forester*, 1(4), 141–145.
- Aurivillius, C. (1891) Collection d' insectes formée dans l' Indo-Chine par M. Pavie consul de France au Cambodge (Suite). Coleopteres Curculionides. Curculionines. *Nouvelles Archives du Museum d' Histoire Naturelle, Paris*, 3(3), 205–224.
- Ayyar, T.V.R. (1922) The weevil fauna of south India with special reference to species of economic importance. Agriculture Research Institute, Pusa, Calcutta, *Bulletin*, 125 pp.
- Boheman, C.H. (1845) In: Schoenherr, *Genera et species curculionidum, cum synonymia hujus familiae. Species novae aut hactenus minus cognitae, descriptionibus a dom. Leonardo Gyllenhal and C. H. Boheman, et entomologis aliis illustratae*, 8(2), 1–504.
- Chao, Y.C. (1977) A study of the weevil genus *Sympiezomias* Faust from China. *Acta Entomologica Sinica*, 20(2), 221–228.
- Chevrolat, L.A.A. (1845). *Revue Zoologique parla Societe Cuvierenne*, 98 pp.
- Faust, J. (1882) Rüsselkäfer aus dem Amurgebiet. *Deutsche Entomologische Zeitschrift*, 26, 257–295.
- Faust, J. (1887) Verzeichniss der von Herrn Herz in Peking auf der Insel Hainan und auf der Halbinsel Korea gesammelten Rüsselkäfer. *Horae Societatis Entomologicae Rossicae*, 21(1/2), 5, 26–40.
- Faust, J. (1895) Viaggio di Leonardo Fea in Birmania e regioni vicine. LX. Curculionidae. *Annali del Museo Civico di Storia Naturale di Genova*, 34, 172–173.
- Faust, J. (1897) Beschreibung neuer Coleopteren Von Vorder und Hinterindien aus der Sammlung des Hrn. Andrewes in London. Curculionidae. *Deutsche Entomologische Zeitschrift*, 2, 337–388.
- Günther, K. & Zumpt, F. (1933) Curculionidae: Subfam. Tanymecinae. In: Schenkling, S. (Ed.): *Coleopterum Catalogus auspiciis et auxilio W. Junk*, 131, 1–131.
- Hart, W.C. & Rengaswamy, S. (1926) Preliminary investigation into cause and cure of the spike disease in sandal (*Santalum album*) in north Salem division, Madras Presidency. *Indian Forester*, 3(8), 373–390.
- Heller, K.M. (1901) Rüsselkäfer aus Ceylon gesammelt von Dr. W. Horn. *Deutsche Entomologische Zeitschrift*, 2, 337–350.
- Howden, A.T. (1982) Revision of the new world genus *Hadromeropsis* Pierce. *Contributions of the American Entomological Institute*, 19, 1–80.
- Kono, H. (1930) Kurzurussler aus dem japanischen Reich. *Journal of the Faculty of Agriculture, Hokkaido. Imperial University*, Sapporo, 24(5), 153–242.
- Kamimura, K. Nakane, T. & Koyama, N. (1964) Seasonal and altitudinal distribution of beetles on Mt Jonen the Japan Alps, with descriptions new species I (Studies on the insects of high mountains III). *Scientific reports of the Kyoto Prefectural University, Natural science and welfare science*, 15, 14(1): 17–42.
- Lacordaire, T. (1863) *Histoire Naturelle des Insectes. Genera des Coleopteres ou expose methodique et critique de tous les genres proposes jusqu' a ce jour dans cet ordre d'insectes*, Paris, Roret, 7, 620 pp.
- Marshall, G.A.K. (1916) Coleoptera. Rhynchophora: Curculionidae. In Shipley, A. E. (ed.): *The Fauna of British India, including Ceylon and Burma*. Taylor and Francis, London. XV+367 pp.

- Marshall, G.A.K. (1918) On new African Curculionidae I. *Annals and Magazine of Natural History*, (9) 1(1), 1–11.
- Marshall, G.A.K. (1921) On new species of Curculionidae attacking forest trees in India. *Bulletin of Entomological Research*, 11(2), 165–166.
- Marshall, G.A.K. (1941) On Curculionidae (Col.) from Burma. *Annals and Magazine of Natural History*, 11(8), 345–379.
- Pajni, H.R. & Gandhi, S.S. (1988) On the genus *Indomias* Marshall, with description of new species (Insecta, Coleoptera, Curculionidae, Brachyderinae). *Reichenbachia*, 25(35), 173–176.
- Poorani, J. & Ramamurthy, V.V. (1997) Weevils of the genus *Lepropus* Schoenherr from the Oriental region (Coleoptera: Curculionidae: Entiminae). *Oriental Insects*, 31, 1–82.
- Roelofs, W. (1879) Diagnoses de nouvelles especes de Curculionides, Brenthides, Anthribides et Bruchides du Japon. *Annals de la Societe Entomologique de Belgique*, 22, 53–55.
- Ramamurthy, V.V. & Ghai, S. (1988) A study on the genus *Mylocerus* (Coleoptera: Curculionidae). *Oriental Insects*, 22, 377–500.
- Ramamurthy, V.V., Nathan, B.P. & Anand, R.K. (1992) Further taxonomic studies on *Mylocerus* with new synonymy of *Hyperstylus* (Coleoptera: Curculionidae). *Oriental Insects*, 26, 119–152.
- Singh, P. (1964) Studies on the pests of *Rauwolfia serpentina* Benth ex. Kurz. I. *Indian Forester*, 12, 839–842.
- Supare, N.R., Ghai, S. & Ramamurthy, V.V. (1990) A revision of *Tanymecus* from India and adjacent countries (Coleoptera: Curculionidae). *Oriental Insects*, 24, 1–126.
- Thompson, R.T. (1992) Observations on the morphology and classification of weevils (Coleoptera, Curculionoidea) with a key to major groups. *Journal of Natural History*, 26, 835–891.
- Voss, E. (1932) Weitere Curculioniden aus Yunnan und Szetschwan der Sammlung Hauser (Col. Curc.). *Wiener entomologische Zeitung*, 49, 57–76.
- Wadhi, S.R. & Batra, H.N. (1964) Pests of tropical and subtropical fruit trees (pp. 227–260). In: *Entomology in India*. The Entomological Society of India, New Delhi. pp. 513.

Appendix 1. Annotated checklist of *Indomias*, *Burmotragus* and *Sympiezomias*

A: Genus *Indomias* Marshall

Piazomias Lacordaire (in part), 1863: 90; Marshall, 1916: 159

Sympiezomias Faust, 1887: 5; Marshall, 1941: 350

Type species: *Sympiezomias prasinus* (Boheman, 1845: 416); Marshall, 1916: 159 by the designation of Marshall, 1941: 350

<i>acutipennis</i> (Boheman)	India
<i>ajaykumari</i> sp. nov. [NPC]	India
<i>albizziae</i> sp. nov. [NPC]	India
<i>anamalainus</i> (Marshall)	India
<i>beesoni</i> (Marshall)	India
<i>cretaceus</i> (Faust)	India
<i>decipiens</i> (Marshall)	India
<i>dubeyi</i> sp. nov. [NPC]	India
<i>frater</i> (Marshall)	India
<i>glabrirostris</i> Pajni & Gandhi [PU]	India
<i>hispidus</i> (Marshall)	India
<i>kriparami</i> sp. nov. [NPC]	India
<i>kraatzii</i> (Heller)	Sri Lanka
<i>lividus</i> (Marshall)	India
<i>maicykuttyae</i> sp. nov. [NPC]	India
<i>mangalai</i> sp. nov. [NPC]	India
<i>marshalli</i> sp. nov. [NPC]	India
<i>mayarami</i> sp. nov. [NPC]	India
<i>menoni</i> sp. nov. [NPC]	India
<i>perroteti</i> (Boheman)	India
<i>praeteritus</i> (Marshall)	India
<i>prasinus</i> (Boheman)	India
<i>premlali</i> sp. nov. [NPC]	India

<i>rajendrani</i> sp. nov. [NPC]	India
<i>ramakrishnani</i> sp. nov. [NPC]	India
<i>sharanagoudai</i> sp. nov. [NPC]	India
<i>sulphuratus</i> (Marshall)	India
<i>yercaudensis</i> sp.nov. [NPC]	India

B: Genus *Burmotragus* Marshall

Piazomias Lacordaire 1863: 90 (in part); Marshall, 1916: 159

Sympiezomias Faust, 1887: 5; Marshall, 1916: 159; 1941: 351

Type species: *Sympiezomias metallescens* Marshall, 1916: 170 by the designation of Marshall, 1941:351

<i>affinis</i> Marshall, 1941: 352 [NRS]	Myanmar
<i>excisiventris</i> Marshall, 1941: 352 [NRS]	Myanmar
<i>malaisei</i> Marshall, 1941: 351 [NRS]	Myanmar
<i>metallescens</i> (Marshall)	Myanmar
<i>Sympiezomias metallescens</i> Marshall, 1916: 170; 1941: 351 [BMNH]	
<i>similis</i> (Marshall)	India
<i>Sympiezomias similis</i> Marshall, 1916: 171; 1941: 351 [BMNH]	

C: Genus *Sympiezomias* Faust

Piazomias Lacordaire, 1863: 90 (in part); Marshall, 1916: 159

Sympiezomias Faust, 1887: 5; Marshall, 1916: 159; 1941: 350

Type species: *Brachyaspistes velatus* (Chevrolat) by the designation of Faust, 1887: 5

<i>amplicollis</i> Nakane in Kamimura <i>et al.</i> , 1964: 17–42	Japan
<i>basalis</i> Aurivillius, 1891: 207	Laos, Thailand
<i>chenggongensis</i> Chao, 1977: 226	China
<i>cicatricollis</i> Voss, 1932: 63	China
<i>citri</i> Chao, 1977: 225	China
<i>clarus</i> Chao, 1977: 224	China
<i>consobrinus</i> Voss, 1932: 63	China
<i>cribricollis</i> Kono, 1930: 189	Taiwan
<i>cupreovirens</i> Marshall, 1918: 1 [BMNH]	S. Africa
<i>ellipticus</i> Faust, 1895: 172	Myanmar
<i>elongates</i> Chao, 1977: 224	China
<i>guangxiensis</i> Chao, 1977: 225	China
<i>herzi</i> Faust, 1887: 30 [SMTD]	China, Korea
<i>humilis</i> (Faust)	Russia
<i>Piazomias humilis</i> Faust, 1882: 264; Marshall, 1916: 159	
<i>lewisi</i> Roelofs, 1879: 53; Gunther and Zumpt, 1933: 20	Japan, China
<i>menglongensis</i> Chao, 1977: 225	China
<i>menzhehensis</i> Chao, 1977: 224	China
<i>serratipes</i> Marshall, 1916: 169 [BMNH]	Myanmar
<i>shanensis</i> Marshall, 1941: 349 [NRS]	Myanmar
<i>shanghaiensis</i> Chao, 1977: 226	China
<i>subserratipes</i> sp. nov. [NPC]	India
<i>subvirens</i> Marshall, 1941: 348 [NRS]	Myanmar
<i>sulcicollis</i> Faust, 1895: 172	Africa
<i>unicolor</i> Chao, 1977: 224	China
<i>variabilis</i> Voss, 1932: 62	China
<i>velatus</i> (Chevrolat)	China
<i>Brachyaspistes velatus</i> Chevrolat, 1845: 98; Faust, 1887: 5	